THE DEVELOPMENT OF THE WINDOW IN IRELAND *c.* 1560 – 1860, WITH AN ANALYSIS OF THE IMPLICATIONS FOR CONSERVATION

VOLUME ONE: AN HISTORICAL SURVEY

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VOLUME TWO

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AN ANALYTICAL INQUIRY INTO THE REQUIREMENTS FOR THE CONSERVATION OF HISTORIC WINDOWS IN IRELAND

This inquiry attempts to answer the questions as to why window conservation is or is not carried out in Ireland and discuss some of the pertinent problems associated with the practice of it. Agreed international conservation guidelines (to which this state officially subscribes) are used as a reference to show the philosophical basis of conservation and the responsibilities that are thereby incurred. Issues relating to the level of professional and craft expertise in Ireland, as well as the benefits and drawbacks of the retention of windows are covered, as they illuminate the very real difficulties faced by those who wish to repair their old windows rather than replace them. While outside the scope of conservation, alternative window styles and materials are summarised to demonstrate their unsuitability to historic buildings.

Several case studies are outlined in the second half of this essay, of buildings which have had works done to their windows within the last thirty years: some of these will be familiar from the foregoing historical account. Just as crown glass was sold in three qualities in the eighteenth century – best, second best and third best – these case studies have been divided into three levels relative to their adherence to the international conservation guidelines. Several examples have been chosen to illustrate the codes of practice and varieties in standards of conservation, which are clarified and elaborated upon by reference to several other projects.

A philosophy for conservation

It is indisputable that historic buildings contain an importance that transcends mere age; they are the achievement of the ideals and skills of architects, builders and artisans and contain numerous artistic and craft components which add to their worth. Indeed they embody an irreplaceable visual and material link with the age and society in which they were created. It is the principal argument of this thesis that old windows in historic buildings (including those not original) are elements that provide vital evidence in understanding the complete story of their structures and which add considerably to their historical worth and aesthetic quality.

The internationally accepted philosophy that defines architectural conservation is encapsulated in the various charters, recommendations and resolutions brought out under the

aegis of ICOMOS (The International Council on Monuments and Sites), The Council of Europe and UNESCO (United Nations' Educational and Scientific Organisation). These documents, rigorously and comprehensively drafted by conservationists, form a type of constitution, laying down the ethics and parameters of work admissible in conservation.[1] They attempt to define policies and help to clarify "best practice" in phrases using key words such as integrity, sustainability and minimal intervention. Truth to material and to history underlies their ethos, putting conservation works into context, and informing the approach to repair. (A list of common definitions drawn from these documents is given in Appendix Five.)

The charters arose out of very real threats to the historic built fabric world wide, not only from the destruction of large and well-known environments, but also in latter years from a common experience of the problems of incremental, uncontrolled changes to the more ordinary historic building stock in the small scale but widespread intervention typified by window replacement. All of the international charters state that no part of a historic building can be usefully considered in isolation from the rest of the fabric, as all of the components are interdependent, hence the need to accord windows equal status with the other elements.

The terms heritage, historic and authentic should be very carefully used in relation to windows. *Heritage* is an all-encompassing term for that which is of value, received from past generations and handed down unaltered; it is not a description of any individual artefact (much less a new product). The idea of heritage is slightly nebulous; it has connotations of that of value which has been held in trust through the generations. Buildings or items with a heritage value are easily destroyed by non-conservative actions and once gone are irretrievably lost to the whole community and to future generations. Authentic and historic windows contribute to the heritage of the place, and for this reason as much as interdependence with their building must be treated with the utmost respect.

The scale, size, style, construction materials, colour and decoration define the formal appearance of a building. In Chapter Four it was shown how vital a proportioned fenestration and the correct detail in windows is to the form of Irish Classical architecture. It follows that any work to the windows will affect the aesthetic of a building, and that major alterations to the windows will profoundly alter the way it is perceived.

The authenticity possessed by an old building is made up of the effects of age on its constituent parts; as the charters imply, this cannot survive any "restoration" which seeks to remove elements simply on the grounds of age. John Ruskin, the first widely known conservationist of the British Isles, emphatically stressed the impossibility of copying in the name of restoration; that which was made in the spirit of a different age and worn by centuries of use could never be recalled by a new artefact, however artfully wrought.[2] Unless merit is seen in all of the surfaces and old materials (such as the crown glass) there cannot be a proper understanding of the quality that has made old buildings such potent monuments. The patina of age as much as the pattern of building should not be underestimated as a powerful force in the connection that binds people to their home places, and imparts spirituality into the architectural heritage. The irregular appearance of old glass and familiar, soft-edged materials of authentic windows contribute largely to the patina of Irish classical architecture and hence should be regarded as part of the symbiotic relationship between man and his built environment.

The definitions concerning works to historic windows are commonly used in an erroneous fashion in Ireland, and have led to unacceptable levels of alteration and destruction of value. Any review of international guidelines shows that words such as *restoration*, *rehabilitation* and *reconstruction* are closely defined; all lay emphasis on the retention of the maximum amount of historic fabric and the limitation of new work to that which is structurally or functionally essential. The definition *restoration* is most often misused with regard to windows. Strictly speaking it does not allow for the introduction of any new material, and merely describes returning the existing fabric (whether hidden or disassembled) to a known earlier state. Further, restoration (of existing components) is only justifiable if in returning the fabric to the known earlier state the cultural significance of that place is recovered.[3]

Rehabilitation is a term more used in America than Ireland, but can lead to a misconception of the type of work to historic windows which can be considered ethical in terms of the aims of conservation. As defined by the *Appleton Charter*, rehabilitation is the "modification of a resource to contemporary functional standards which may involve adaption for new use". It is not an inherently conservative term and must be used with caution. It has been found in this study that adaptation should only be resorted to if it is the only means of

conserving the item as it is likely to alter the historic value of an artefact.[4] There may be particular cases when, in the context of a carefully worked out policy, the adaption of historic windows (to take patented weather-proofing, for example) could be carried out ethically, but this action should not be deemed conservation.

Reconstruction, similar to restoration, cannot include work that is conjectural. It is permissible only when the building is incomplete without the new article, when it is designed in a manner that both is identifiable as new work (on close inspection) and when it respects the details of the existing work (avoiding the generalisation of typical features).[5] As Bell has pointed out there is a tendency to confuse the terms replication and reconstruction. Whereas reconstruction should be discernible as new work, the intention of replication is to produce an exact copy and within the strict confines of architectural conservation is intrinsically deceptive. The only charter to mention replication (New Zealand) does so only to exclude such action.[6]

Irish adherence to international standards of conservation

A summary of the idea of conservation in Ireland is pertinent. Austin Dunphy, an architect with many years experience, puts the view that "it must be remembered that appreciation of our architectural heritage was [in the early twentieth century] confined to a very few, and did not have the almost universal approval that it has today. Even such important buildings as the Four Courts and the Custom House [both in Dublin] were not restored in the manner that we would approve of today [after war damage in the 1920s], but were rebuilt using what remained of the existing structure". The architects gave themselves a free hand in their treatment of the interiors, retaining only those which had escaped total damage.[7] Matters have improved since these "restorations" and expertise has been built up both in and outside the Office of Public Works. The international philosophy of conservation has been accepted at an official level in Ireland since the signing of the Granada Convention (*Convention for the Protection of the Architectural Heritage of Europe*, Council of Europe, 1985). As of autumn 1996, the steps and controls to be set in place to oversee adequate statutory preservation were drafted but not implemented.[8] This policy aims to word the future legislation in a conservation-orientated framework that nevertheless respects the conflicting requirements of modern society.

The interpretation of the charters for the situation in Ireland is the basis for the formation of a specifically Irish conservation ethic. The lack of a rigorous approach in Ireland (to date) based upon such a tightly defined philosophy has caused a situation to arise where there have been works done under the guise of "restoration" which have on the contrary helped to eliminate the stock of historic windows. It is only by ensuring that standards are practised with respect for every part of the historic fabric that precedents will be set and followed in window conservation. It could be argued that these small scale (in overall architectural terms), insidious developments – partial and complete changes of windows and doors for example – have had almost as destructive an effect on the authentic fabric of the country as wholesale demolition.

The ethics of conservation cannot be imposed on a society unwilling to adhere to them, nor can visual awareness ("the sensibility to visual excellence" sought by William Morris[9]) be taken for granted; both must be taught eloquently and persuasively. Ideally, the general public should realise and practice their responsibilities towards their heritage; however despite official promotion it is unlikely that such awareness will ever permeate through every level of society.[10] The primary method of spreading the philosophy of conservation is through organised education (covered below) but should also be assisted through the mass media and public events. This requires official backing and a genuine will to understand the very broad meaning of heritage and the accurate interpretation of the international definitions.

Success in promoting conservation in Ireland will depend on the education and attitudes of those effecting changes, now and in the future, and official support for methods of work which cannot be carried out as economically as can modern building repair. Public interest is increasing, but not at an informed level, and ill-considered policy statements are still formulated by bodies with little knowledge of the accepted terms and definitions applying to proper conservation. There is also a need to move on from the present position in which many legislators, householders, financial institutions and developers see historic buildings solely as property to be treated at will (within the relatively loose strictures of the planning laws). Many have no conception of their role as caretakers, and are ignorant of their duty to ensure the continuity and centrality of the built fabric. The energy lobby is also attempting to force the

issue with a particularly one-sided vision of sustainability.[11] These short term views of property and energy use disregard the inherent good sense articulated as far back as 1975 by the Council of Europe: "far from being a luxury this heritage is an economic asset which can be used to save community resources."[12]

Conservation policy

The purpose of conservation is to safeguard an artefact or monument and thereby to protect society's long-term interests. At the legislative level, an all-encompassing policy is necessary to guide official and local government actions. Such a policy will necessarily be broad in its original concept and will be refined as the influence of other interests manifest themselves during the formulation process. The framing of a plan for individual schemes will be, in contrast, focussed and specific; far from being extraneous, it is essential that a specific, integrated conservation policy be formulated prior to every project. The policy must cater for the needs of the building, the client and statutory requirements. It will deal with issues ranging from historical research to funding programmes and projected uses and will define the extent and types of repair which are philosophically and practically achievable.

The charters emphasise that a study of the monument or item to be repaired – with an assessment of its physical condition – is an essential ingredient of every conservation policy that should determine its age, importance and condition. The problems faced by the state of a window must be examined, so that both theoretical and practical knowledge informs the policy statement. The policy statement will include the results of research into previous works and so avoid compounding earlier errors or failing to notice fundamental information on the age or worth of the components. Adequate time must be given to this preparatory stage so that appropriate actions are judged on all of the known facts, as "ill-conceived dilapidation surveys, inadequate perceptions of durability and misguided specifications lead to an almost automatic bias ... towards component replacement rather than repair".[13]

The policy document must answer some difficult questions concerning the future use of the windows. Every authentic old window will be possessed of qualities which render it "historic" within the terms of the charters, and an analysis of these qualities will help to define its worth within the particular conservation brief. However, windows by their nature are subject

to constant use in normal situations; the challenge of the policy statement is to set out how, or if, the windows should continue in normal use. As Bell writes, "should we be demanding that they carry out ordinary everyday tasks as well as the outstanding work only they can perform?"[14] The charters state that the original or another socially useful purpose is the best for the conserved historic building, which must be balanced by the minor alterations and continuous maintenance required by normal use. In the context of the whole building, it might be argued that "small adjustments ... to fit the changing needs of the inhabitants ... without any significant effect on cultural significance"[15] could include works to the historic windows that contradict the principles of conservation. It is highly undesirable that this conflict should arise, but it is probable that without a far greater degree of knowledge of the worth of windows, there will be a continued loss of historic evidence and value, even in the (otherwise) most informed conservation projects.

The complete policy document "will contain many elements, from evaluation to strategy, planning to implementation. It must ask what the programme is trying to achieve and should also consider what the relative importance of the window truly is. The resolution of these questions should lead to a clear expression of the purpose of the programme, a statement of significance and a structural framework leading to a method of repair."[16]

From such a tight framework a strategy will be developed to manage the practical process of conservation, limiting the implementation of actions to those necessary to the proper conservation of the windows, and improving and directing the skills of those involved. The organisation of this process should utilise craft skills, time, materials, and client needs to maintain a fluid progression of work and satisfactory communication between all involved. The long-term conservation policy must also be kept in view, as a repair project is not an isolated piece of work, but merely a bridge between past and future maintenance.

The concepts that identify and encapsulate the ethical basis of conservation philosophy (referred to by the international documents) must be recognised and clearly stated in the policy statement where relevant. These principles of integrity, respect, authenticity, minimal intervention, legibility and reversibility (among others) are the tenets against which all actions should be measured.

Quite obviously the limits imposed by the international definitions makes the setting out of rigorous parameters necessary in the conservation of windows. The introduction of new work is not necessarily prohibited, if the old has been let decay beyond repair, but as Ruskin wrote, it should be honestly faced and not couched in ambiguous language. "Look the necessity in the face, and understand it on its own terms. It is a necessity for destruction." New work entails a compromise of the integrity, and cultural significance of the building, whatever its necessity. More insidious and often less clear is the ethical approach that should be taken to minor alterations of the existing window fabric. All of the charters note that any additions or alterations that are indispensable to the conservative repair and compatible use of the building must be properly noted and dated, and included in the accompanying documentation. It must be borne in mind, however, that the mere recording of such alterations does not justify their inclusion, if they are not designed or implemented within the spirit of conservation. The financial realities of the client must also be faced by the conservator at this stage, in order that only those works absolutely necessary to the continued life of the windows are undertaken until such a date as more funds are available to allow comprehensive repairs to be done.

Documentation

It is agreed by all historians and conservators that research, records and documentation are necessary actions to be taken both before and during building work, to preserve the appearance of the building or object(s) as found, to record the actions used (demonstrating why they were taken) and to show the appearance of the object when conserved. The policy statement should include specific references to recording of the work, as the decision process will thus be clearly visible, the philosophy of the supervisor of the works apparent and any changes in the fabric traceable. Working within the competitive contracting system it is very difficult to proceed with such care and attention, as the need for documentation will not always be understood by the client, nor will the time it takes be considered acceptable. It is not at this time a requirement to produce documentary evidence of the works done for the grant of aid to a project (nor does such an approach apply to work carried out within the public sector), however, this proposal should be examined at the earliest opportunity by the Heritage Council and presented to Government as part of the revised legislation on Architectural Heritage now being

prepared. Despite the added expense, exact documentation will be of immense value not only in determining the scope of future works to the same building – as part of a dilapidation schedule – but also as it helps to illuminate the solutions found to problems encountered in other situations. In this regard, subsequent publication is invaluable. An official system of grant-aiding publications on conservation case studies – to promote evidence of good practice – would help to establish the importance of documentation to a wider audience.

The conservation professional and tradesman

Conservation is an integrated discipline, which relies on co-operation between a wide range of individuals: specifiers, designers, local authority officials, craftsmen and clients, and also the various industries that supply materials. The conservation of windows relies most heavily on the competence of the professional specifier or designer and the tradesman, although to be successfully achieved it must enjoy the support of official authorities and clients (as yet many of the latter lack an educated viewpoint). Insufficient awareness on the part of any of those involved can compromise the quality of a project. The Council of Europe has been to the forefront in identifying conservation strategies at all levels of education (including public responsibility), with the publication of three *Recommendations* on training.[17]

Both theoretical and practical repair skills are needed and should be interdependent; ideally professional people should possess an understanding of the limitations of practical work and tradesmen understand the theoretical basis of the instructions. This must be a co-operative relationship whereby both can shape the work as it progresses, within the agreed brief. Without such an understanding there cannot be a fluent translation of ideals and evaluations into the completed project. A joint vision is necessary: knowledge of the manufacturing processes of the period in which the window was made and an appreciation of the realities and performance expectations of the late twentieth century.

The major drawback in promoting window conservation in Ireland today is the lack of specific post-qualification training available for both professional and tradesman and a dearth of general knowledge and experience of window details. This is a widely recognised deficiency, which pertains as much in Northern Ireland as in the Republic. The absence of detailed

knowledge is seen in the public service almost as much as in private practice.[18] The supply of conservation materials is a very important matter to both the architect and tradesman.

"The physical success, or otherwise of a completed conservation scheme centres on the ability to ensure an adequate supply of all relevant traditional materials and the availability of properly trained craft skills to work them. Fail on any one aspect and the inferior quality of the finished project is liable to compromise the value of the whole."[19] The substitution for the correct materials of less suitable ones that are more easily procured may inculcate a low standard across the board and a tendency to compromise one's way out of difficulty.[20] In the conservation of windows, the very real problem of obtaining crown or cylinder sheet glass appears to spill over into a reluctance to search out good, slow grown softwood, and instead of repair, new work is made in tropical hardwood and glazed in float glass. With the proper education and understanding of conservation philosophy neither professional nor tradesman would excuse such practices.

Professional: The architect will refine the principles of window conservation to suit the problems of each project, however, he or she must embrace a wider scope than the purely philosophical: "in the end, the problems that we have to solve are not only technical. If they ignore men and their ways, engineers [and architects] fail to rise to the task. Sometimes in making what seem to be savings we merely incur other, heavier costs."[21] John Piper cautioned sense: "*Perform the act with sensibility.* Sensibility can turn an act of 'restoration' into one of conservation; it can even remove the inverted commas from 'restoration'".[22]

The role of the architect, specifier or planner includes an obligation to do the best for the building. John Bolger, the director of a conservation joinery firm in Dublin, points to three elements vital to the professional carrying out of a project. These are that the correct detail is specified and adhered to ("close enough" is not sufficient), that the phrase "you can't make that any more" is a self-fulfilling prophecy, and that available expertise should always be used by the project leader whether at a professional or trade level.[23] On the other hand, judgment must be exercised regarding the duplication of designs which have patently failed. Some window details became redundant because they encouraged moisture to be retained, such as the placing of timber lintels at the face of the wall. The architect and builder must together decide on the

best course, bearing in mind both the importance (to the building) of the historical detail and the long-term effects of modern solutions (which are permitted in a situation where the original has been lost through decay[24]).

When the professional involved has architectural training, his or her background in visual awareness should be useful to encourage responses to the aesthetic worth of the windows (including glass) in client and contractor to counterbalance any dismissive attitude which would favour their destruction. The converse side of this coin is that architects tend to prefer the visual clarity and clean lines apparent in new goods; it is also easier to sell this fresh image to the client (as new products by their very "newness" appear to embody durability).

One of the most important roles of the professional is that of supervisor of any work in progress. Close attention must be paid at all times to the standard of workmanship and to decisions that arise in the course of works on what and how to repair, requiring the architect to take into account the opinions of the workmen and the financial implications for the client.

Decisions on the care and uses of historic windows that are made by the professional (and justified in the policy statement, as noted above) should take account of their compatibility both to the windows and to the complete building. Environmental controls affecting windows directly or peripherally should be assessed to ensure that they respect the existing and traditional equilibrium and do not set in motion processes of deterioration (either in the fabric of the windows or in adjacent masonry, joinery or plasterwork).

One of the principles of conservation is that of reversibility, which may be applicable in some improvements to window performance (such as weather seals and secondary glazing). On the other hand the significance of the window must be of a level that small scale (but invasive) works – additions and inevitable removals – will not lessen its integrity and value. Relatively few historic windows should be treated this lightly. A close look at the published comments on reversibility indicate that reversible or "substantially reversible"[25] processes are to be preferred where unforeseen problems could arise or when compatible changes of use are necessary. With regard to the fitting of weather seals, there is a very real threat of "unforeseen" problems due to their limited life span and the intrusive methods of installation, which counteract the benefit that is forthcoming in the short term.

The design of new windows to be used – with attention to detail and material – is another job undertaken by the architect. It is not uncommon in Ireland to see complete sets of windows manufactured without proper reference to historical sources, and more than once new, supposed replica, windows have been made to an inaccurate design (as at Dublin Castle, p.198). The quality of the materials used (or the specification of such details as preservative treatments) needs to be closely examined by the professional, to ensure suitability and optimum performance.

> Magic cure-it-all treatments, sold through sophisticated marketing techniques, can often lead professionals into thinking they have just specified the panacea of all ills. (...) Unquestioning over-reliance on the hard-sell can subsequently produce "interesting" consequences, and even greater maintenance problems to contend with in the fullness of time.[26]

The use of modern materials should be very limited in conservation: such materials must demonstrate an identifiable advantage, be founded in a firm, scientific basis, be supported by a body of experience, be compatible with the expression, appearance, texture and form of the original and meet the requirements of both the local physical and geographical conditions.[27]

In a world influenced to a high degree by the stipulations of insurance companies and the readiness of litigants, conservation professionals are under pressure to show that the old conserved item offers as high a standard of performance as a comparable new product or installation (however rare it is or whatever cultural significance it is shown to possess). Naturally the issues of safety, longevity and monetary value are important to the client of a conserved building but the architect must emphasise that the tenure of the owner is merely of a "caretaking" nature and the item has a value (and ordinarily a life span) that will far outlast the present generation.

Tradesman / construction industry: In the past a largely unwritten knowledge of materials, methods and approaches kept alive the skills which facilitated the repair of old fabric. While there was not necessarily what would be strictly termed a conservation viewpoint, a natural inclination towards timber husbandry, familiarity with old materials and proven ways of doing things engendered a respect of certain methods and distrust of others, all based on

experience. For example, it is common to see old, still functioning scarfed repairs to the frames of sash-windows, done with competence and a healthy regard for the value of timber. However, since the Second World War, with "the change not just in building techniques but in the very organisation of the construction industry, many skills and attitudes of mind have almost entirely disappeared".[28]

Craft education and practice has concentrated overwhelmingly but not universally on new works and products. The Dublin Institute of Technology has continued to teach old methods of carpentry to apprentices through the bleak years (for conservation) from the 1960s onwards. This grounding is now being harnessed in collaboration with the Heritage Service and educational establishments for the organisation of post-qualification training in conservation joinery and carpentry. At the time of writing preparations are being carried out, consulting the timber and general contracting industry, unions and teaching staff at the relevant institutions. However, as yet, the absence of appropriate craft education taught in a specifically conservation context is detrimental to the implementation of a conservative mentality.

With the death of the apprentice system and increasing specialisation within each trade the knowledge of old materials and repair is endangered as is the readiness to work conservatively. Young joiners now either stay in the workshop assembling standard components or work on site, fitting those already made by the lump system. Skill in window repair (including the careful reglazing of old sashes) does not have to be learnt in a bonded apprenticeship, but the workshop structure wherein such knowledge was formerly transmitted is getting less common. As mentioned above, some very common mistakes made at design or consultation stage are included in the finished article, due in part to the craft workers' ignorance of window details and particulars and perhaps a lack of detailed working drawings, or, most likely, reluctance to give good work the extra time needed.

The tradesman needs to have just as thorough a grounding in conservation philosophy as the professional as many small works are contracted out without the input of an architect or engineer. Whether or not there is an overt bias towards conservation in a particular project, the supervisor on the job should be aware of the long-term implications of the interventions carried

out, and also that there may be a detrimental effect on the building from hastily chosen late twentieth-century solutions.

The craft worker must be taught the value of using the existing material, accompanied by a sound knowledge of the behaviour of old materials and traditional methods of construction. Sir Bernard Feilden notes that the conservation craftsman "has to understand the history and technology of his craft and be able to analyse how historic work was set out and produced."[29] If there is a lack of skilled tradesmen prepared to work with existing objects and old materials it is difficult for a committed professional to persuade his or her clients to adopt a conservation mentality in building maintenance and repair. The relationship between client and tradesman is also important: if one or both place an importance on reuse of all possible fittings then the balance of the expense (spent on craft time and skill instead of off-the-shelf products) can be worked out prior to signing the contract.

The construction industry is implicated in the failure to provide solid training and high standards in practice. According to John Bolger free advice should be given by the contractor (within his area of competence) before the tender stage, as it is worth the time and will probably result in receiving more contracts in the future. The contractor should also advise the professionals involved when past experience can be brought to bear on details in a project as he may sometimes be the expert on a particular point. Bolger warns of the pitfalls of not training apprentices properly – they are not just cheap labour – and notes that joinery shops should be prepared to evolve and use modern methods where appropriate.[30]

Although there are relatively few joiners who have sufficient skill and practice in repair (this term is deliberately used here as distinct from conservation), a number of main contractors have employees capable of such jobs.[31] The problem of window repair really manifests itself where small jobs are concerned. If repair to windows does not form a part of larger works, few standard joineries have the inclination or appropriate skills to carry it out. Few companies, large or small, are content to take on the sort of piecemeal work that was formerly often done by a jobbing tradesman, such as the balancing of weights. The willingness to do small works appears to depend on the employment of the joiner on the black economy – despite the dangers caused by lack of insurance cover – which further depresses the true number of craftsmen able to

undertake window repairs on a competitive basis. One of the biggest impediments to an increase in the numbers of conservation woodworkers is their relative position within the trade: carpenters who specialise in shuttering can earn double the amount paid to a conservator. This situation can only be improved when a higher value is placed on conservation as a whole and reflected in equal renumeration.

The craft of glazing has changed dramatically during the twentieth century, as there have been many technological changes in glassmaking, bonding agents and window types. In commercial glazing firms the craft is commonly divided into glass cutter and glazier, both of which require separate skills. That of the glass-cutter is no less skilled in approach to the material than historically but glazing is now mostly concerned with modern sealants and the fitting of pre-fabricated units.

Until the eighteenth century glass cutting, lead-glazing and glass painting were functions of the glazier; as lead-glazing and armorial painting died out, cutting and wet-glazing (glazing with putty) became the usual work, commonly paired with painting or plumbing. As the traditional crafts of the glazier are combined in the stained glass studio, the modern stained glass craft worker is now nearer to the historic glazier, continuing the tradition of respect for the time involved in making an artefact. For delicate conservation glazing, the use of the stained glass conservator may be a better option than a regular glazing firm, as the former will recognise and take care of the surviving panes of crown and sheet glass. An alternative to either this or a standard glazier is now found in franchised conservation joineries. These workers are trained not only in joinery repairs but also in reglazing with old, salvaged glass.

REPAIR VERSUS REPLACEMENT

Advantages and disadvantages of conservative window repair

The balance in favour of the conservation of windows in historic buildings depends on several factors: a perception that they possess aesthetic and material qualities, a belief that it is possible to undertake repairs at a realistic cost and trust in the continued worth (and use[32]) of the window. There is no doubt that the attention to detail required by conservation poses real problems which are not always quickly or satisfactorily solved by either precedent or

knowledge on the part of the professional or joiner, nor by consulting publications on the subject.

A number of practical disadvantages can militate against conservation. These include not knowing the full extent of repair before proceeding, uncertainty about the continued use of a material that may already be up to three hundred years old, the lack of a guarantee on future performance, and the delicacy of many sashes. Problems are commonly encountered during disassembling and repairing from the breakage of glass or timber. One must also face the difficulty of choosing compatible materials for spliced repairs, appreciate the time involved in good repair and the removal of glass by softening putty, and the procuring and careful use of old salvaged glass. Statutory requirements on safety in public buildings and the public perception of rottenness of windows (and the stated levels of performance of possible alternatives) also add to the difficulties in promoting window conservation.[33] The appearance of the old artefact before conservation can be off-putting to client and architect alike, as the timber is hidden by generations of paint coats that can obscure the mouldings (analogous to the wear of the surface which was beloved of Ruskin[34]).

The advantages can seem less persuasive, however, as emphasised in many charters, conservation by its insistence on minimal intervention causes least upset to the actual building fabric and the unique and the aesthetically suitable handblown glass and superior quality timber are retained. Added to this, the proven longevity and known performance of the existing windows are not compromised and ingredients vital to the history of the building survive. In the long term there is a better resale value for the building and good long term value for money from the work. Enhancement measures (where found to be proper) are substantially reversible and there is proper circulation of air within the breathable fabric. Most positively of all, the historic window continues to exist intact for the appreciation of this and future generations.

These advantages, coupled with the recognised conservation principles on cultural sustainability are laudable, but very often they must be fought for due to the limitations imposed by the competitive and hurried world of building contracting. Business requires a fixed time frame in which work is completed, a known life span for the object and precise budgetary control. Richard Oram, senior architect at the Environment and Heritage Service, Department of

the Environment (Northern Ireland), sees the method whereby money is raised as crucial to the likelihood of conservation. Where a committee or company is responsible, repair is far less likely to be done. Within the commercial sector it is easier to fix a budget using new products whereas in private projects it may be more feasible to carry out open-ended piecemeal repairs. The initial cost projection for repair may be substantially lower than for replacement but experience shows that subsequent re-evaluation and injections of money are commonly necessary. Usually long term maintenance has not been sufficient, as dilapidation schedules and quinquennial inspections are widely unknown. By the time a decision is reached to look for quotations for repair or replacement, conservation would entail work on very many parts of each window – sill, bottom rail, and frame stiles, to name the common ones – so that replacement becomes the easiest option.

A few general comments might be made about the formulation of contracts to suit conservation works, bearing in mind that it is a complete subject in itself. Alistair Linsday, architect, formerly of the Office of Public Works, Dublin, recommends that the documentation for tendering works is deliberately structured and phrased for repair (not replacement with option to repair), so that the contractor knows in advance that repair skills are necessary.[35] It is also essential to employ a sympathetic quantity surveyor who is prepared to survey the works in detail and become familiar with the situation. Such attention to the conservation policy of the architect by the tenderer may well be reflected in a more competitive price, as happened with the successful contractor, Cleary and Doyle, at Rathfarnham Castle, Dublin. When the winning firm appreciates the breadth of the conservation work, it can prepare to sub-contract out specialised elements of the work (such as stained glass restoration or paint analysis).

Another possible way to circumvent the stranglehold of the lowest tender price might be to cite a provisional amount in the tender, to be re-examined when the work is studied in detail. However, loopholes in the wording can lead to protracted and acrimonious dispute. Negotiation with the prospective contractors would be better than working from a set bill of quantities, but the advent of competitive tendering in state contracts has worsened the situation, with little communication beforehand. If the projected work cannot be inspected sufficiently at the tender

stage the builder will either overprice to his disadvantage, or underprice it and perhaps refuse to do repairs of more expense than those specified initially.

One example is sufficient to illustrate the problems that can beset the conservation project. At the Casino, Marino, Co. Dublin (see below) a yearly budget was fixed at the outset of the works (in 1975) but not a contract period. The amount of work necessary was grossly underestimated and so the costs increased, and consequently the restoration was not complete until 1984, which would be unthinkable in a commercial undertaking. Errors in costing (and timing) projects such as this give conservation a bad name as expensive and elitist.

From a contractor's point of view, the standard phrase "repair as necessary" is insufficient;[36] the architect must specify exactly what is required otherwise he or she cannot expect the work to be properly costed and priced. The cost of window repair as a stand-alone project can be relatively high, but if undertaken while other repairs are ongoing some of the costs will be covered already and as a small proportion of the overall budget it will appear more acceptable to the client.

Statutory regulations often work against the retention of historic fabric, windows no less than other elements, as do insurance company stipulations or policies (of persuading prospective policy holders to install double-glazing, for example). The Health and Safety Acts must of course be given due regard, as a building should not become a firetrap nor endanger its occupants. Standard window-pane thicknesses in buildings with public access militate against crown and cylinder sheet glass, but it has been found by conservation architects that there are ways of retaining the glass.

Secondary glazing can be installed for safety, as at the Merrion Hotel, but non-invasive, easier and cheaper methods include attaching a rail to the interior to prevent people leaning out or falling through the glass (as recently done at Portlaoise Courthouse, Co. Laois). The significance of the windows concerned must be evaluated against potential loss of worth or actual damage to fabric; this pertains as much to secondary glazing as more invasive methods of "upgrading" windows. The view of the historic window from both exterior and interior is one of its values; any additional material thought suitable must be first examined for its aesthetic affect at close hand and from a distance. Plastic laminates stuck on the glass are quite popular to

render it less breakable, and have the added benefit of preventing UV rays from passing through. These are used in many museums and National Trust properties in Northern Ireland; however they do have a limited life span and can discolour. Such films should never be used on historic glass. At Kilkenny Castle the glass has not been kept in the windows that were "conserved" over the last few years, and a decision was recently made to glaze with a patent UV-inhibiting float glass.

The insertion of an inner sheet of laminated glass to the interior of the lower sash may be adequate to satisfy safety inspectors, which can be disguised with a net curtain or blind. There are plenty of historic precedents for inserting protective sheets in timber frames; many nineteenth-century offices and pubs used them, thereon advertising their name in gold lettering. Good relationships between local authorities and architects can help; officials are sometimes prepared to allow original windows to be kept without the need for double-glazing, and more often will accept facsimile replacements. However, this depends on the view of the particular fire-officer, and the extent to which the architect stresses the importance of conservation of both glass and sash.

The problem of adequately caring for and storing historic fabric removed during the course of the work can be exacerbated by the unthinking disposal of it by operatives. At the Royal Hospital, Kilmainham (during the 1980s work), a clause was inserted into the contract that all material taken out of the building would remain the property of the owner (and stored on site), a condition rarely found in the normal building contract. By this method full discretion was left to the architect as to re-use, and the contractor could not claim ownership or salvage value. During the Merrion Hotel, Dublin conversion (mid-1990s), all historic fabric and materials removed from the four buildings was kept in storage, pending a decision on its future.

Alternative windows: different materials and/or styles

Windows may have to be reconstructed where the originals have decayed to a great extent, but such replacements should always be designed by modelling the old ones exactly.[37] None of the following information involves materials that could be countenanced in conservation work, but is included here to highlight the unsuitability of almost all modern window materials and types for old buildings. As seen above, the charters insist that new

products should not be used in conservation until properly tested and proved by experience. Those available today are gradually being shown to be short-lived and destructive to the fabric of old buildings. Issues of fire safety, longevity, value for money and material drawbacks (in sourcing, construction, use and disposal) are of concern.[38] Nothing need be said on the forms of modern window developed up to this date, as none bear close resemblance in their details to authentic timber sash-windows.

UPVC windows do not have as long a life as sound windows built of slow-grown timbers; the very best estimate is for sixty years, though this has been challenged and industry sources estimate twenty or thirty year maximums.[39] They require maintenance to achieve this life span, though the plastic surface degrades and cannot be painted and the patented hardware has been found to wear out before the windows themselves, so hinges and catches have to be replaced (if this is possible). It has been found that the use of uPVC coupled with double-glazing combines to render escape almost impossible in the event of a fire, due to toxic fumes, inability to break the glass, sophisticated locking systems and often small opening casements (usually located at the top of the window).[40]

Tropical hardwood sash-windows are a modern alternative in replacements (in "restoration" projects) at the top end of the financial scale. Most are sold as teak, but are more likely to be made of iroko, an inferior timber for external use. It is possible (but rarely happens) for these windows to be made as exact (and documented) copies of those discarded, and the tendency to use varnish rather than paint marks them out as visually different to those replaced. The use of tropical hardwoods in repairs to existing windows (sill replacement, for example) is also to be avoided, not only as oak is the traditional and most suitable material for sills in Ireland, but also as the sourcing of tropical hardwood is under question.[41]

Double-glazed units, very commonly installed in new products, are not recommended in either repair or replacement of windows in historic buildings. When small such panels are glazed (into multi- or single-paned windows), the sash-frame and glazing bars must be appreciably thicker, the sealant strip on the unit is visible, there is a double-vision effect in reflection and the sash will weigh almost twice its normal weight.[42]

Funding sources

Most Council of Europe and UNESCO recommendations make reference to the desirability of public funding for conservation of the built heritage, as it concerns all of us in perpetuity. A combination of favourable tax rates, grants and loans (and combinations of these) are suggested to enable both public and private participation in financing conservation.

An informal debate is ongoing in Ireland, stimulated by the publication of the draft policy on the architectural heritage, on the issue of funding building conservation through the public sector. A small grant system is in place under the Heritage Council for general repairs, and this has helped to fund several window conservation projects. However, the vast majority of listed – and other architecturally significant buildings – remain in need of a form of kick-start funding to act as a catalyst for private repairs, as happened over thirty years ago in Edinburgh New Town.

In the mid-1980s a home-improvement scheme was set in place by the Irish government to provide tax relief in return for upgrading domestic houses. Although it was initiated in the best interest of the owner, this scheme set in motion the first wave of sash-window destruction, and the installation of thousands of aluminium, plastic and inappropriate timber windows. The biggest lesson to be learned from this experience is that no un-directed scheme should ever again be initiated that could have such a detrimental impact on the historic built fabric. Awareness and expertise in repair must exist before legislation is drawn up, preferably with state-sponsored publications and information campaigns illustrating the real choices, possibilities and responsibilities. The integration of expertise and cross-consultation between government and semi-state departments (with the help of knowledgeable individuals) would significantly help to formulate legislation based primarily on the needs of the buildings, not those of the legislators and especially not of the replacement product lobby.

Tax relief for the conservation of windows is currently limited to those availing of legislation which requires a certain level of public access to the building. This ideally should be extended to include all types of building and those on all levels of income. The owners of old buildings, many of them relatively small houses, may not earn enough to benefit from relief that is geared towards those on a high income. At the same time, the possibilities offered by tax

relief are limited, in that the monies for repair would still have to be found by the owner, reimbursement – in the form of later benefit – being practically invisible. In the case of particularly important buildings – those containing especially rare windows – there must be an argument in favour of full grants, dependent on the income of the owner. A scheme might be formulated similar to that operating in Scotland, whereby the Scottish Historic Buildings Council gives grants subject to the owner retaining ownership for a minimum period of years (which clause prevents the inadvertent funding of commercial developers).

Where the owner of an important building is reluctant to see the benefit of conservation (and is liable to have the windows replaced), there could possibly be provision for the implementation of works under contract to the local authority, the outlay being recoverable against the future sale of the building.[43] It is widely known, however, that official bodies are very reluctant to operate a system which could tie up funds for an indefinite period.

A very real financial problem will have to be faced by the granting authorities as the public becomes more educated and aware of the possibility and desirability of repairing old windows. There is a high level of neglect of the stock of old and valuable windows in Ireland held in check merely by the quality and good detailing of the windows themselves. Any scheme to help conserve windows may well be faced with two immediate problems: a deluge of applicants and a shortage of skilled craftsmen and discerning specifiers. It is therefore recommended that the issue of post-qualification training be dealt with prior to the introduction of any scheme for public financial assistance for window repairs.

CASE STUDIES

The following case summaries refer to works carried out to the windows of each building, and cannot be construed as being a comment on works to other elements in that building. Best practice cases are based on the closest possible adherence to conservation principles. Most of those reported here, though carried out within the spirit of conservation, fall short of complying with international standards in their entirety. Many for example do not adhere to the Burra Charter definition of conservation: "all the processes of looking after a place so as to retain its cultural significance," that is, its "aesthetic, historic, scientific or social value for past, present or future generations".[44] In the best cases the existing window joinery and glass

is examined with a view to conservation. Windows are then sympathetically repaired retaining as much original material as possible – architraves, sills, shutters, frames and sashes and the ironmongery associated with the window. The highest quality projects show that conservation of windows is possible and achievable, and need not entail any more specialist input than that already available in Ireland. Most of the cases outlined (in all the categories) fall short on documentation, so an exact detailing of policies, changes, and works to old fabric is impossible.[45]

The most rigorously carried out projects outlined here include The Royal Hospital, Kilmainham, which is outlined as a prime case. Works to Rathfarnham Castle, Dublin, are also summarised in some detail and reference is made to the conversion of the Presentation Convent, Carlow into a library and several other cases.

Second best practice is accorded when there is partial retention of existing fabric within an otherwise conservative approach and some degree of accuracy in replacement work. The work at nos. 21-24 Upper Merrion Street is used as the prime case, while Skiddy's Almshouses, Shandon, Cork, and The Casino, Marino, Dublin are covered in detail and reference is made to Doneraile Court, Co. Cork, Fenn's Quay, Cork and nos. 3-4 Fownes' Street, Dublin.

Third best practice is based on cases where whole windows were completely replaced with either aesthetic or material differences observable in projects which were carried out to buildings of historic quality. Work at Dublin Castle (upper and lower yards), Bellinter, Co. Meath, Royal Spur, Augher Co. Tyrone, nos. 25-33 Upper Merrion Street, Dublin, and an almost infinite number of other cases would deserve inclusion. Included in this category is the replacement of windows with those of dimensions loosely based upon period examples. In such cases historical research is often undertaken but conjecture ultimately prevails and the primary purpose of conservation is lost. Dr Steevens's Hospital, and 85 St. Stephen's Green, both in Dublin, are two examples worth detailing.

There are other buildings in need of window conservation or in which works are proposed, in which a high standard should be upheld. The Southwell Gift Houses, Kinsale, St. Werburgh's Church, Dublin, no. 50 Pope's Quay, Cork, Carrick-on-Suir Castle, Co. Tipperary,

and no. 13 Henrietta Street, Dublin are several examples (among many which will not get the attention they deserve).

BEST PRACTICE

Royal Hospital, Kilmainham (1680-84): Within the space of ten years (1981-1991) the hospital was restored and then altered for use as a museum. The architectural firm, Costello, Murray and Beaumont of Dublin carried out the repairs from 1981 to 1984. The architect, John Costello, consulted historical references to previous works carried out at the hospital.[46] A summary of the project was published by the architect in the *RIAI Bulletin*, from which the following information is taken.[47] The existing sash-windows of the main floors were all removed for stripping, piecing and repairing, reglazing and repainting. Most piecing in was done at the bottom tenons. John Costello recorded approximately a seventy-five percent salvage rate for these eighteenth- and nineteenth-century windows, which were of pine and in excellent condition. The decayed early nineteenth-century-granite sills were replaced by concrete sills with a bush hammered finish, left unpainted. John Sisk and Sons, a Dublin contractor, carried out the work. Seventy percent of the existing glass was saved and reused, while new crown glass was bought from Dublin Glass and Paint Co. Ltd.

In early nineteenth-century alterations the brick Boswell architraves had been rendered over. The work supervised by Costello included cement-based re-rendering of the exterior which is particularly unsuitable on the soft brick. Dr McParland of Trinity College and other Dublin historians asked that at least one of the Boswells be saved this treatment; the contractors complied and covered the architrave of one east front window with a plastic imitation.

Costello does not recall replacing the arcade windows of the courtyard (timber cross-windows with fixed timber lights, illustrated in plate 16 iv) but the present lights and frames appear to be recent. Photographs exist of one of these windows before any work was carried out, showing what may well be original cross-windows with eighteenth- or nineteenth-century lights. The present lights are glazed uniformly with float glass.

The second major set of works undertaken was the conversion of the building into a museum under the supervision of Shay Cleary, architect. When contacted about the question of the arcade windows, he stated that no work was done to the actual fabric that did not relate to

the fitting out of the museum. (This would exclude any work on the arcade windows.) The internal cross-windows lighting the corridors at first floor level were in this second series of works covered up to provide more wall space, which in principle could be reversed.

The accolade of best quality conservation work is limited in this example to the treatment of the main floor sash-windows, and excludes the unanswered question of the arcade windows and the inappropriate rendering of the Boswell architraves.

Rathfarnham Castle (*c.*1583, windows of the 1770s): The window conservation at Rathfarnham Castle was carried out to best practice standards by the OPW (architect Alistair Lindsay, assisted by Barbara Kenny, who took over from Lindsay subsequently). The main contractor and the sub-contracting carpentry firm were fully prepared to work with the old materials, using skilled workmen. As explained above, the tender was based on careful examination of all the windows, and a schedule of work was drawn up for each individual window, covering all aspects from glass types to the state of the timber and ironmongery. As the castle is a National Monument it was felt that the proper approach was to conserve as found in the museum manner with minimal intervention, as the fabric is more important than considerations of use. It was found that the extent of decay, typically at the bottom of sash and frame, varied widely, with some frames almost past repair and others intact. On some occasions timber tested solid but on examination had deteriorated behind the surface to such an extent that scarfed repairs were impossible. It was decided that the use of resins was acceptable in the reforming of timber sills after cutting out decay, as maintenance will be continuous and there are no commercial pressures regarding product life span.

A smith repaired the iron-cored sashes at Rathfarnham (in the first floor reception rooms) which date from the 1770s. A number required sandblasting as moisture had penetrated and was delaminating the iron and splitting the hardwood glazing bar slip. At Rathfarnham these sashes were glazed onto the iron (leaving the usual latitude) without difficulty. Lindsay is of the opinion that iron could be drilled for sprig nails if necessary, or modern adhesive glazing compounds could be used and that as the sash has lasted for so long, it should continue to function and non-invasive methods should be used to ally any fears about performance.

Documentation suffered in this project, as in most others. It was not done in as much detail as recommended by ICOMOS, as writing up work proved very time-consuming. While the original window schedule will be of use as a reference point, the actual work carried out varied slightly, with some work unclaimed by the contractor in the final account and some claimed for but not carried out to the same extent (for reasons which became clear only as the work progressed). The question of ventilation in old buildings is important to Lindsay, who decided not to install any proprietary draught-proofing systems. He notes that from a conservation point of view such systems represent a modification of the window and their use should be weighed up carefully. Unfortunately at present the building regulations are contradictory in that heat loss standards conflict with ventilation requirements, though as a National Monument the castle is exempt.

Presentation Convent, Carlow (1880s): The question of joinery repairs is central to best conservation practice. The experience of the joiner conserving the sashes at the old Presentation convent, Carlow (being converted to a library by the National Building Agency [NBA]) is that an average of two and a half sash-windows per week can be repaired to a high standard using one joiner and an apprentice (a higher rate will occur with larger, experienced teams). This, though expensive, was acceptable to the NBA. Most of the sashes (of the late nineteenth century) were in excellent condition, with over-painting the main problem. The sashes were cleaned, paint removed (carefully with a blowtorch, as was putty from broken panes[48]), the dowels removed, re-wedged and dowelled and glued and cramped. (Where tenon repair to the stile/rail joint is necessary, the glass must be removed.) Some sash joints were originally glued, while others were not and neither were the frame joints glued; as animal glues are not now used, waterproof Caskamite powder glue is preferred.

The sills and bottom corners of the frames needed attention in most cases. Whereas it was a simple matter to source slow-grown pitch pine (from a Co. Wicklow joinery) for spliced stile repairs, it proved impossible to get the correct dimensions in pitch pine for replacing some sills (as originally used), and iroko was used. The outer lining was cut away approximately twenty-four inches from the end, and the frame stile twelve inches, both cuts mitred to aid water run-off at the joint (plate 162 i-iii). Most of the original pulleys were repaired and refitted, but

those worn from use were replaced by a plastic and aluminium model. The shutters and associated joinery were repaired, but many new aprons and shutter box elements were made using MDF (medium density fibreboard), which is not appropriate in a historic environment.

The joiner at the Carlow project has long experience repairing sash-windows and is currently teaching an apprentice in the construction firm. At *no. 11 South Frederick Street, Dublin*, the window repairs were carried out by Advance Joinery, a small Dublin firm which specialises in working in restoration and will run up relatively short lengths of off-standard mouldings to old profiles. Pieced timber repairs were carried out with the maximum original material retained. At *no. 10 South Frederick Street* and *no. 4, Castle Street, Dublin*, a cabinetmaker has carried out similar work, only with more attention to detail and using old salvaged timber where possible, to achieve best quality results.

SECOND BEST PRACTICE

21-24 Upper Merrion Street, Dublin (*c.*1765): This terrace of houses was built in the late 1760s or early 1770s. No. 23 was fitted with the very latest in slim hardwood sashes (with plate iron glazing bar tongues) on the main floor of the front elevation (plate 74 i). The basement sashes of this house were of the thicker, Palladian variety (plate 74 ii). Subsequent replacement of main floor windows took place piecemeal. During conversion to a hotel in 1996-7 (by Burke Kennedy Doyle, architects) the decision was taken, prompted by the planning office, to repair rather than replace the windows. At this stage the construction of the plate-iron and hardwood sashes had not been detected. At the outset of the conversion the sashes were numbered and identified, and removed to the premises of W & J Bolger Ltd., joiners and agents for the Ventrolla System. Frederick O' Dwyer, architect at the OPW, provided expert advice at the behest of Dublin Corporation (but not in a mandatory role).

The fitting of double glazed units was discussed and rejected, and there was a debate about accommodating the statutory minimum depth of glass permissible in buildings having public access. The maximum amount of the existing crown and sheet glass was salvaged, and the shortfall made up by a proprietary kiln-formed sheet glass, obtained from the London Crown Glass Company Ltd. This is French sheet glass heated in a kiln on a shaped bed to acquire the sort of surface not incompatible with nineteenth-century glasses. On completion of the repairs,

the sashes were re-inserted. However, building work was not finished, and very many panes were broken subsequently. Secondary glazing was also fitted, which in a hotel, has the added advantage of providing better sound insulation but the visual drawback of a "double vision" effect occurs.

The slim sashes posed another problem; apparently they do not comply with regulatory glazing bar dimensions, as the rebates are particularly thin, giving only the smallest ledge possible against which the glass can fit (plate 105). The question of applying an external bead was discussed but deemed impractical as the glazing bar tongue is iron and too much interference would result from drilling every member. A solution agreed by the client and joiner (without the knowledge of the OPW) was to fit new hardwood slips over the metal with a wider profile. The ingenious original method of assembling the sash-frame and metal was noted but not reused by the joinery. (See Chapter Three, p.151.) When these were reassembled non-ferrous metal ties were fastened to the ends of the bars, bypassing the internal rod. It was decided to replace rather than refit all of the basement windows due to pressure by the client (and perhaps because no counter proposal was offered by the architect or joinery firm) to fit new sashes of a far slimmer profile. The original, stocky windows of no. 23 (plate 74 ii) have an uncertain future, although pressure has been put by O'Dwyer on the client to reinstate them.

The remaining wholly timber sashes (and all frames) were repaired to a high standard, but the treatment of the hardwood sashes contradicts good conservation practice. Admittedly there was a difficult problem to overcome, but both the client and the architect should have given due weight to the uninterrupted and satisfactory performance of these very rare sashes over the past centuries. Had glazing the slim sashes with putty not satisfied the authorities it would have been preferable to fit glazing beads as first suggested (in order to retain maximum original fabric). The discarding of the authentic hardwood for new – and wider – slips is to be regretted, and it is hoped that on each slip a date is stamped. The level of documentation of this project by the architect is not yet clear.

Skiddy's Almshouses, Shandon, Cork (1718-9)*:* The almshouses were bought and repaired by the Cork Preservation Society (which formed a private company to oversee the work) at the start of the 1970s, to prevent them being demolished like the contemporary

Greencoat School adjacent. The architect was Peter Murphy of Frank Murphy and Partners, Cork. According to notes made prior to starting the project "an absolute minimum of alterations to original layout and finishes is intended. There are no alterations to the original external elevations".[49] The windows are two-light unhung sash-windows, with a solid central mullion (as shown in plate 148). Those on the east side of the first floor facing the courtyard appear to be of the late eighteenth century, although a print of 1721 shows clearly that the original configuration was the same (it is not yet established if any of the frames are original). Many of the first floor sashes on the west, facing into the courtyard, and on the ground floor and rear were replaced in the 1970s work with approximate reproductions (with horns and different glazing bar mouldings) but the frames appear to predate this work. Some windows at the rear (east) of the building have been replaced recently, seemingly in their entirety, with hardwood hinged windows. The dormer windows appear to be late nineteenth century in style, as both sash and frame and have arched roofs (the originals were mullioned sashes, with hipped roofs). Measured drawings of 1974 show the dormers marked out with multi-paned sashes, but these were not installed. A general respect for the historical details of the building, evident in the other works, was not carried through to the details of the windows; however those which were kept were treated with care.

Casino at Marino, Dublin (1758-69)*:* Much of the window joinery in the Casino was replaced in works during the 1930s. The basement (and probably the first floor) windows were "renewed" in the 1930s and 1955, and from 1974 a comprehensive programme of works was undertaken under the direction of Austin Dunphy, architect.[50] The contractor was the OPW and the furniture branch of the OPW did the work to the windows. The decision was taken to return the building as closely as possible – with minimum intervention – to its finished state of 1773, as its function as a garden building was always primarily aesthetic. Where evidence (actual or circumstantial) was lacking, it was to be returned to the condition left after the second Lord Charlemont carried out repairs in the 1830s. In the 1980s the frames and sashes of the main floor were replaced apart from that lighting the stairwell. The oak overdoor light was not included in the work. Dimensions of glazing bars were taken from the stairwell sash (though it is not known for certain if this window was original) and the new sashes glazed with glass

curved to imitate crown. Unfortunately this glass gives the appearance of being plastic due to the uniform way that light reflects off the bellied panes.

Nos. 2-5 Sheares Street, Cork: The basis for inclusion in the second best category is that most original window joinery is retained and that care is taken in specifying the mouldings and quality of replacement material. The early eighteenth-century terrace, nos. 2-5 Sheares Street, Cork (originally called Fenn's Quay) is being repaired (since 1994) under the supervision of the Cork architect Jack Coughlan. The sashes and frames in some rear windows remained at the start of the work, but all of the frames have now been replaced. Some of the late eighteenth- or early nineteenth-century sashes on the front elevation have had pieced repairs, but the extent of the repair has meant that most of the wood is in fact new. This work has had the glazing bar moulding made up to match the existing slim type accurately. The charters find that reconstruction should not constitute the majority of the fabric, a recommendation that may be contravened in this case.[51] However, the intention is laudable, and in the quality of the work far exceeds attempts made elsewhere to retain the authentic fabric. (Again, lack of documentation renders impossible an opinion on the found condition of the sashes.)

A frame that was removed was stored on site (as of July 1997); this shows the original single-hung construction made out of solid stiles of timber. Despite this evidence the current window frames are double-hung, with new metal and plastic pulleys. Of interest is the retention of the original shutters and architraves where they were found, and the re-use of original shutter ironmongery (hinges and iron bars). Some original sashes were found on the staircases. Most of these have been replicated, in new frames (although one remained in situ as of July 1997).

Nos. 3-4 Fownes' Street, Dublin: A terraced pair of houses of similar date to that above, nos. 3-4 Fownes' Street, Dublin, was repaired in 1993-4 under the supervision of several architects, the Irish Georgian Society and Temple Bar Properties (a semi-state organisation responsible for urban renewal in this area). The numbers of advisors led to difficulties in the management of the work, and possibly in the formulation of policy at the outset. The work was carried out by Advance Joinery. At the rear of the house a number of original windows remained in openings which were blocked up during the nineteenth century, but at the front later sashes were in place, some in original frames. The decision was taken to remove all the later

sashes and make up facsimiles based on the dimensions of the originals. A problem was posed with regard to researching the form of the dormer windows which had been blocked up (probably during the last century). Without a precedent to guide the work, sash-windows of a similar detail to those on the main floors were installed (the blocked windows have been left in place). On this site there was a distinct lack of control over the removal of objects, and more than one window was found in the skip. Original pulleys and square iron weights were also removed.

Doneraile Court, Co. Cork (1690s – 1725) was derelict when repairs were started by the Irish Georgian Society in the 1970s. Work was done under the supervision of the architect Frank Murphy, of Cork, and Desmond Guinness of the Georgian Society. The situation was similar to that in Fownes's Street and Fenn's Quay in that later windows were in place, dating from the late eighteenth and early nineteenth centuries. The windows of the library (of an African hardwood) were repaired, but almost all of the other windows were replaced in their entirety on the advice of the professionals involved, using the dimensions of the library windows. The joinery not reused is stored in the house, including a rare solid frame, with a weight pocket cut out for a single-hung sash (similar to that at Fenn's Quay). Under the close observation of Mr Murphy such details as full sills were correctly replaced. Unfortunately the death of the architect occurred before works on the windows were completed. Some windows that were installed after this date have half sills which were not detected until the work was finished.

One of the easier ways to undertake repair is in a private case, as deadlines and initial project estimates can be less restricting. At *Abbeyleix, Co. Laois*, the owner has set in train a long project of repair, which includes reinstatement of the original front elevation windows (removed in the 1960s) and includes conservation work, under the architect John O'Connell. At this house the garden front windows had been replaced with skeleton sashes in the Victorian era; as the current owner prefers the aesthetic of the divided sash, these sash-frames were taken out and attenuated glazing bars inserted into them. The philosophies that inform conservation do not extend to the alteration of elements that have a place in the history of the building. As a

result, while the historic fabric has been kept (in its original use) the insertion of modern glazing bars would be deemed to contradict the exacting principles of conservation.

THIRD BEST PRACTICE

The category of third best work could include very many projects, some aimed within the conservation sphere and others carried out with little regard for a building's history or architectural value. The words of John Piper will undoubtedly echo for several more generations: "people tend to talk about all restorations as 'tasteful' at the moment when they are done, and as 'acts of vandalism' fifty years later".[52] Works in the 1980s at *Dublin Castle*, designed to return the buildings to a previous state, included the replacement of all of the sash-windows (with mainly nineteenth-century sashes, the age of the frames unknown) with six-over-six pane sash windows. Two OPW architects and two sets of contractors were engaged to work on the Upper and Lower Yard respectively (excluding the adjacent Treasury Building). The historic research undertaken appears to have consisted of the consultation of a print by either of two artists, Tudor (1750s) or Malton (1790s) for information on the form of the windows. When the works were almost complete, two sets of mismatched windows were installed, conflicting with each other, as the aspect of the buildings had changed considerably in the interval between the mid and late eighteenth century. One new set was quickly made up so that both conformed to the later type, but these windows are substantially different in character from those of the late eighteenth century, in having horns and being glazed with float glass.

Similarly, much unnecessary window replacement took place in recent years at a mid- to late eighteenth-century terrace, *nos. 25-33 Upper Merrion Street, Dublin*. As at Dublin Castle, a complete set of off-the-shelf windows were installed – with horns – and glazed with float glass. The contrast with the project at nos. 21-24 on the same street is striking. Unfortunately this is only one of many dozens of similar such "refurbishments".

At *Royal Spur, Co. Tyrone*, the plantation tower was added to in the early nineteenth century in a Regency Gothic style, at which time the lights may have been modernised. However, all knowledge of their historical development is now lost as approximately five years ago new joinery was made up to fit within the original mullions and transoms. This does not appear to be based upon any researched sources and highlights a problem even within the

relatively strict listed building consent legislation in Northern Ireland. This restoration, with similar work done at Laurelvale, Moy, Co. Tyrone, an early eighteenth-century yeoman's house and no. 28 The Parade, Donaghadee, Co. Down (undated seventeenth century), (which both have recent replacement sash-windows), was carried out within the terms of the Northern Ireland planning laws. The outcome has been unsatisfactory in each case. It is not known to what extent the original fabric of these windows could have been reused, nor was there a satisfactory level of control of the details of the replacements. In similar work at Clonmannon, Co. Wicklow (of the early eighteenth century) a local joinery made up replacements (which may not have been necessary) by assembling unmoulded sashes and running around the perimeter of the panes with a router, causing the corners to be rounded. This type of work, also seen in the kitchen wing at Doneraile Court, is due more to laziness than ignorance.

The conversion of *Dr. Steevens's Hospital, Dublin* (completed 1735), into health board offices was carried out by Arthur Gibney Architects in 1995.[53] Apparently none of the original sashes remained (though frames may have survived), most of those in place being of the later nineteenth century. The decision was taken to design new windows similar to those of the period (1720s) using the dimensions of a sash taken from a building known to be by Sir Edward Lovett Pearce.[54] Small paned windows with heavy glazing bars were made up, which may well reflect the aesthetic of the originals, but under the strict guidelines of the charters the intention is deceptive.

Bellinter Co. Meath (*c.*1750) is a prime example of intrusive window replacement that took absolutely no account of the value of either the age of the material or of the artefact and also paid little regard to the visual effect on the whole building. This mid-eighteenth-century mansion, now in use as a convent and conference centre, retains original windows to the basement (see plates 51 and 159) and on the lantern lighting the first floor lobby, with slim sashes (and frames) of *c.*1800 to the other floors. However, work done in the early 1990s included the removal of the sashes and frames of the whole of the ground floor garden front and the installation of plastic-framed double-glazed windows, with tilt-and-turn opening lights and white spacer bars to imitate glazing bars. The aesthetic effect is appalling. Other conservation issues are also called into question by this decision. As the heating system in the house is very

effective, adequate ventilation is a problem in the rooms concerned. The cost of these windows in the long term may thus prove unacceptably high to the fabric as well as the pockets of the religious order. It seems that the change of window was directed by a newly appointed mother superior in ignorance both of old buildings and the planning legislation. No action has been taken by the local authority regarding the uPVC windows.

Many of the above cases demonstrate a disquieting lack of understanding or knowledge of conservation principles, and they fail to respect the historic fabric in its entirety (instead being at best selective). It is indisputable that education is still necessary at all levels of operation in the conservation field in Ireland.

Impending conservation projects

This section deals with forthcoming or necessary projects, where the standard of repair or replacement should be monitored to the level demanded by buildings of this quality. Issues of conservation at The Southwell Gifthouses, Kinsale, St Werburgh's Church, no. 50 Pope's Quay, Cork, Carrick-on-Suir Castle, Co. Tipperary, no. 86 St. Stephen's Green and no. 13 Henrietta Street, (Dublin) are summarised here.

As the *Southwell Gift Houses* (1682) pose an immediate problem they are dealt with first. The current rector is hoping to remove the early nineteenth-century quarry-glazed cast-iron lights (with inward-opening casements) and reinstate lead-glazing as, in his opinion, it would be more compatible historically with buildings of this early date. The existing windows have many panes of crown glass. During a restoration in the 1970s these lights were retained but most of the timber frames, mullions and lintels were replaced. Many of the lintels were replaced in oak, in keeping with the original (of which some remain) but the frames are in softwood. At this time the flat-roofed dormers were re-roofed with a segmental arch. These may be of more assistance in the drainage of rainwater but are almost certainly not based on historical research.

The window mullions (and stiles) of the ground floor of the two-storey central house, which face a prominent east wind, are in need of conservation. These have rotted considerably, and the timber is of an inferior quality which would cast doubt on the efficacy of spliced repairs (plate 163). Other works required include painting and some sill repairs. The cast-iron lights appear to be in a stable condition, at most requiring attention to the bottom rails.

Under the terms of conservation charters, old but not original components of buildings have a place in the history of a building, and should not be removed unless decisive arguments can be put forward that they detract from the whole. The Venice charter is specific on this point: "the valid contributions of all periods ... must be respected since unity of style is not the aim of a restoration".[55] Components that are to be reconstructed must be known in all of their details, as conjecture is forbidden under the charters. The particulars of the original Southwell windows – dimensions of the frame and casement-frame, type of lead calme, dimensions of the quarries, type of catch – are not known so any work would have to be specified using educated guesswork. As no similar windows survive in this country, nor are there measured drawings of any such, the nearest examples from which to work would be British. This would entail too great a degree of conjecture – and therefore loss of authenticity – to be acceptable in a conservation project. The removal of the cast-iron lights would lead to almost certain destruction of the crown glass, as this would be very difficult to remove. Whereas the quarry dimensions of the original lead-glazing may perhaps be inferred from the present lights, those windows would have been glazed with broad glass, and not the more expensive crown, until well into the eighteenth century and possibly later.

Several other cases concern buildings of importance. *No. 50 Pope's Quay, Cork* (*c.*1740), is one of the earliest eighteenth-century houses surviving in the city, and is now in the care of Cork Civic Trust. An original three-light window exists at the second stair landing, which is in need of conservation (plate 164). As it is the only remaining original window in this house, and one of very few of this date in Co. Cork, the very highest standard of conservation practice should be ensured. Although much of the timber is in relatively good condition, there is a good deal of work necessary, which should be carried out to a conservation standard, unlike that shown in the replacement of one of the sashes in this window by a hardwood copy.

St. Werburgh's Church, Dublin (1754-59), requires similar consideration. This church retains almost all of its original windows, which is very unusual and contributes to the substantially complete mid-eighteenth-century interior. Two south facing gallery windows have been replaced in recent years as this side receives adverse weather, and is not protected by adjacent buildings. One of these is a sash-window with thinner bars, but the other is a single

light, with grids to resemble glazing bars. The quality and condition of the timber of both appears to be poor. The other windows on this gallery need attention, and there is an imaginative design solution needed to the problems of the particular micro-climate. As always with church buildings, funding will be a difficulty.

It is proposed to carry out historical research in 1998 into the windows at *Ormond Castle, Carrick-on-Suir, Co. Tipperary* (completed *c.*1565), prior to projected works. Window conservation will pose a problem. The current early nineteenth-century timber lights are in tolerable condition, but there may be policy decisions made which favour the retrospective installation of leaded lights. Conservation of some of the stone window frames and mullions is also needed; much has been done in past projects, cutting out and replacing a high proportion of the stones in a manner not recommended by the charters. It is hoped that this project will be implemented with a conservative approach of the best standard possible. However a number of state-repaired buildings dating from the medieval period and seventeenth century – which lost their original glazing long ago – have had replacements installed of a type very loosely based on later windows. *Cahir Castle, Co. Tipperary*, is a case in point. This building has structures spanning several centuries in date; the great hall is a fifteenth-century building with windows of the sixteenth century which have been fitted with lead-glazed squares, about twenty years ago, in rolled gilding-metal frames and corresponding hardware. Square glazing is a much later development, and frames of this type were unknown until this century. *Portumna Castle, Co. Galway* has been fitted with square paned leaded lights in oak frames (using blown glass), although at this period it is almost certain that quarry glazing would have been used. (A freelance stained glass artist who sources the glass himself is employed by the OPW for such jobs.)

The windows of *no. 86 St. Stephen's Green, Dublin* (*c.*1765) were not repaired during recent works done under David Sheehan, architect. Those at the front of the house appear to need just decorative attention but some of the rear windows (notably on the first floor) have suffered failures to some sash joints and require careful conservation (plate 165). These sashes were replaced in the late eighteenth or early nineteenth century when the window-sills were dropped the height of one pane (evidence for this is shown by joints in the shutters and

architrave, and a slight difference in the moulding of the glazing bars of the lower sashes). The correct policy would of course be to accord the windows their place in the building and sympathetically conserve them. However, in previous works at Newman House elements were reconstructed rather than properly restored, due it appears to an overriding consideration with the aesthetic; there would need to be a reversal of this ideology in order to accord the proper importance to the existing windows.

The owners of *no.13 Henrietta Street, Dublin* (*c.*1743) intend to "restore their windows to the original state", that is, replace them with replicas of existing original sashes from the 1740s. Some of the original heavy sashes remain in the basement and top floor, but the main floor windows of the front elevation have very slim and elegant oak sashes of the late 1760s. Working within a conservation ethic the best practice would be to conserve all of the current windows as they make an undoubted contribution to the history of the building, and are capable of restoration (indeed some require no work at all). The slim sashes will require delicate handling similar to those at Rathfarnham Castle and nos. 21-24 Upper Merrion Street, Dublin. The retention of the many panes of crown and sheet glass ought to be a priority during these works. Mid-nineteenth-century sashes of a slightly more robust dimension are found on all floors; to accord these a place in the history of the building goes against the feeling of the owners, principally as they have horns. The window joinery of this house is of a very high standard, with carved mouldings on the shutters of the main floor windows.

All of these examples point to the necessity for stringent control, a sympathetic workforce and a breadth of knowledge on the part of the professional in recognising the value of the existing historic artefact. Sometimes it is just a matter of recognising the authentic local patterns of building when new work is required in an historic environment. Even more worrying, though, are the many projects carried out without regard for the actual evidence that still exists. A carelessly designed new window within a Wyatt arrangement (ignoring the arrangement of the blind sidelights) illustrates a prime example of this blindness, at Upper Merrion Street, Dublin (plate 166). As stated above, conservation makes considerable demands on the practitioner and requires a great deal of clear thinking to formulate a plan that respects all aspects of the history and materials of the building.

The dilemma of conservation

When reviewing and criticising conservation work it may be found that some factors have imposed problems which require a thorough philosophical argument, prior to shaping the policy statement. Previous interventions may have resulted in works that raise questions about aesthetic suitability, environmental considerations and conjectural reconstructions. The Casino is an example of a case where it is perhaps difficult to judge the ideal standard of conservation. Here earlier remedial works blurred the line between original and later fabric, which the Heritage Service had to evaluate within the context of this most rare building. At the time when Harold Leask (as Inspector of National Monuments) undertook emergency repairs to this building not only was funding a problem but the philosophy of conservation was almost entirely unknown in Ireland. As Dunphy states, the 1930s intervention was important for two reasons: firstly it preserved the building until a more enlightened period and secondly the near-destruction of this internationally important building forced into being the National Monuments Act of 1930 which underpins all subsequent legislation.[56] The work done by Leask (who was an exemplary historian) highlights the difference between historical theory and architectural practice in two ways. It is relatively easy for the historian to speculate about the correct design of buildings or components; however, the decision to follow expert advice is the responsibility of the architect, and once carried out it may not only look incorrect but also be proven to be so at a later date.

Conjectural reinstatement (as so often happened in early work) obscures the history of the building, sometimes marginally falsifying it. It is not good enough to use a unique work of art (such as an historic building) for an attempt at historical reconstruction. The installation of new components to slightly changed designs can, over several restorations, actually result in the viewer looking at a substantially newer building than he or she believes it to be. As it is, the appearance of our historic built stock often differs from its original state by the incremental change brought about with the insertion of more modern windows, a different roof or the changes of renders over the centuries. The historian and conservator must bear in mind that, as stated about Dublin earlier this century, "the outward appearance of our earlier houses, as they now exist, seldom if ever give a proper idea of how they originally looked". William Morris put

the dilemma of "restoration" – the replacement of the original – quite bluntly: "the imitative art of today is not, and cannot be the same thing as ancient art, and cannot replace it; and that therefore if we superimpose this work on the old, we destroy it both as art and as a record of history".[57] Implicit in the concept of authenticity is that an object contains within itself certain values belonging to the time and place of its designer and maker. These cannot be applied retrospectively; they are integral to the creative act. A replicated window is made to imitate the appearance of a previous era, but necessarily lacks its zeitgeist; it can never be authentic to the chosen period. There may be a justification for replicating some small but crucially important percentage of an otherwise intact aesthetic whole – depending entirely on the individual circumstance – but total replication of a set of windows is inherently un-conservative and debases the historic evidence.

The question of whether original material (or that currently in situ) should be removed in favour of something which is more pleasing aesthetically and which may appear to be more consistent with the original period has been answered by the ICOMOS charters in the negative. There is, however, a problem in convincing most Irish people of the historical worth of later features, so ingrained has the notion of "restoration" to the "original state" become. The romantic associations connected with old buildings have helped to foster the idea that historical integrity is limited to those artefacts proven to be as old as the masonry itself. Regrettably it is only in the most obvious cases (as at Finnebrogue, Co. Down, where fine Neo-Classical plasterwork replaced earlier interiors) that historians are prepared to accord to subsequent work its due regard.

The condition of fabric that is obviously in poor condition usually sways the decision against retention, as the client takes fright at real or imagined costs and wants to see an end to the problems caused by that component of the building. Neglected timber presents a very off-putting appearance that may obscure the fact that repair is feasible. Clonfert Cathedral, Co. Galway is a medieval church with timber lights of the early nineteenth century (within apparently late seventeenth-century tracery). The detail illustrated in plate 167 (of the most severly affected window in the church) shows that work is necessary to frames and sashes. Though undeniably time-consuming, this sort of repair is well within the capabilities of a good

joiner under the supervision of a competent architect. The underlying value of the windows, and their contribution to the building must be argued by the architect, church authorities or the joiner, and answered with conservative repair.

The reinstatement of details must address the problem of period: many buildings have undergone several changes to their windows, which not only blur the issue of which are the original, but expose the difficulties of "returning" something to a particular period. One must ask oneself to what date in the history of the building is the restoration attempting to be faithful? One must also be sure about the reasons for carrying out work that will obscure or destroy other – later or earlier – developments. The other side of this argument is that all replacement works that cannot be based exactly on surviving details should bear a distinctive stamp of their era (as stated in the charters[58]). Such a policy is easier, however, to implement in new design in historic sites or on masonry works (for example) than with windows as the correct window type is not always identifiable to observers and the use of different details could serve to confuse rather than enlighten. Any windows replicated must be well documented so as not to mislead future historians. Most of the projects outlined in this essay remain undocumented and much information on the works carried out has come from questioning the professionals involved.[59] The increasing number of buildings coming under the restorer's knife has led inevitably to an ever-widening gap between completed projects and published information on the work.

No. 85 St. Stephen's Green, Dublin (1730s), designed by Richard Castle, had conservation work supervised by Sheehan and Barry, Architects, Dublin in 1989-90, with a separate contract for the upper floor in 1994. No original windows remained. As a decision was taken to return the building as close as possible to its original state[60] several architectural historians were consulted about the fenestration. A policy decision was taken which favoured the replacement of the existing windows and measurements were taken from windows of other buildings by the same architect (Richard Castles). The work carried out included the reinstatement of the original sill levels to the first floor saloon windows, which had been lowered in the last century to let in more light. The justification for doing this work was to restore the coherency of the design; the lower sills broke through the string course on the exterior and through the chair rail in the interior. Clearly the wholesale replacement of existing

windows to achieve an ideal and consistent "period" appearance runs contrary to the philosophy espoused by the charters, but was persuasively argued by a number of architectural historians (who as historians would have been primarily concerned with illustrating the original aesthetic). This example clearly illustrates that as consultants, conservators and historians are not interchangeable, and for works of this nature the mistaking of one for the other should be avoided so that the aesthetic is not accorded a greater value than the fabric.

During the work evidence of a segmental lunette was uncovered over the stairwell Venetian window, the date of which was debated.[61] The solution adopted by the architect was to cover it again but show its outline, as the physical noting of covered details or elements is acceptable conservation policy.

The policy document is the essential tool; properly formulated it should answer most if not all of the questions as to the best way to proceed. The answers are, of course, already in existence in the international charters. Those who would dissent from the provisions of these "constitutions" of conservation must be required to prove their arguments case by case, in order that there is a presumption in favour of the old materials and a careful examination of the benefits and drawbacks of new work.

Wilful change

Deliberate change in the design of replacement sash-windows is not new. At the start of the twentieth century the authors of the Georgian Society *Records* railed against the removal of glazing bars on some buildings, notably Belvedere House, Dublin. "If these sashes" (the original ones at Belvedere House) "are compared ... it will be seen how much they add to the design and to what extent the character of a Georgian house is lost by the thoughtless substitution of plate glass."[62] This attitude was understandable at the time from a historical point of view, but now a more measured opinion may be taken, with a realisation that the new design represented a step in the history of glass technology and as such these windows have now become another part of the story of the building. All the same, more recently Alec Clifton Taylor commented that "the removal of the glazing bars converted the window openings into no more than a series of dark, cavernous holes in the wall. Such windows wear a vacant look, devoid of expression, like a drawing of a head on which the face has been left out."[63]

Russborough, Co. Wicklow (begun 1741), had lost its original sashes by the end of the last century. The owners of the house in the 1930s expressed interest in reinstating six pane sashes; in the 1950s complex modifications were made, fitting false glazing bars to the Victorian sashes.[64] The Dobbs family of Castle Dobbs, Co. Antrim, would like to reinstate six-pane sashes to the garden front of their house out of an aesthetic preference, as the current nineteenth-century two-pane sashes do not accord with the architecture of the mid-eighteenth-century house. The work at Abbeyleix, Co. Laois, done to suit the wishes of the new owner, has already been discussed. Conversely, at Curraghmore, Co. Waterford, Lord Waterford is even yet replacing late eighteenth-century six pane sashes with single pane ones as he wishes to admit more light into his rooms.

This inquiry highlights the most important precepts and policies necessary to the conservation of historic windows. One of the principal findings of the research is that almost every professional who was contacted displayed only partial appreciation of the ethics of conservation, with a cavalier attitude especially towards the treatment of later fabric, and a tendency to favour reconstructions over the repair of the existing windows. Such a diluted view of conservation philosophy points to a need for far stricter guidelines to inform those who profess to be conservationists. A system of accreditation preferably based on international standards should be considered. An independent professional body has recently been set up in Ireland, the *Institute for the Conservation of Historic and Artistic Works in Ireland,* which may be the ideal vehicle for assessing conservation practitioners to ICOMOS standards.

GLOSSARY OF TERMS

Apron: the panelling on the inner face of the wall below the window-sill, also called a window back. The term apron can also describe the external panel below the window in a Venetian window (q.v.), dressed with engaged balusters.

Architrave: the moulded and panelled joinery housing for a window-frame on the inner face of the wall, usually containing shutters, soffit, apron and inner sill (if any), bordering the inner face of the wall.

Block: a square block (also termed *die*) placed over the intersection of the glazing bars behind which the glazing bar joints are lapped. Hence the term block sash.

Boswell: flat, projecting architrave of brick surrounding a window, of the 17th century.

Calme: extruded H-section lead, used to hold small quarries or squares of glass in a leaded light.

Diocletian window: a three light window forming a semi-circle, with a pier of brick or timber between each light. It is also known as a Thermal window as the form was used extensively in the Thermae (Baths) of Diocletian in Rome.

Double-hung sliding sash: a sash-window with both upper and lower sashes hung by a pair of iron or lead weights attached by cords (usually) to each sash, which run through pulleys to effectively counterbalance the weight of the sash.

Fixed light: also known as a dead-light, the most basic window, which cannot open.

Frame: the case or border enclosing a pane of glass; the timber holding a light may be described as a frame, but more commonly the word means the window frame affixed into the wall. For the parts of the frame, see apron, architrave, head, lintel, outer lining, parting bead, pulley, shutter, sill, soffit, staff bead, stile and weight.

Glazing bar: the internal grid of moulded and jointed timber lengths fixed to the stiles and rails, providing rebates for glass and structural support for the sash.

Head: the top rail of a window frame, jointed to the stiles, sometimes performing the function of a lintel (q.v.).

Horn: also called a joggle or bracket. A small shaped projection left at the lower corners of the top sash, and top corners of the bottom sash, to strengthen the corner joints.

Latticework / latticed window: a fixed light or casement assembled using quarries of leaded glazing (q.v.), cast iron or timber in a diamond pattern.

Leaded glazing: glazing consisting of small glass panes held with soldered lengths of lead calme, in an iron or timber frame, worked in a diamond or square pattern.

lantern/lanthorn/lutheran light: a projecting rooflight, usually lighting a stairwell or landing, with normal windows, or roofed with either slate or copper or glass in a wrought iron armature.

Lintel: the horizontal member (s) supporting the masonry above the head of the window.

Margin sash: a sash with a thin border of panes and a large pane (or several) to the centre. Many late nineteenth-century examples have coloured glass to the narrow panes.

Mullion: a vertical prop supporting a window frame, of stone or timber, against which casement or sash lights close or move.

Oriel window: an overhanging projecting window, sometimes set upon corbels.

Outer lining: the outer framing of the sash-window frame, constraining outward movement of the top sash, and jointed to the stile; usually given a bullnose moulding.

Overdoor light: any fixed window placed over a door, either constructed directly above the door, within the frame, or above the doorcase. In unusual cases the overdoor light will have a hinged opening light, or itself be hinged.

Palladian window: see Venetian window.

Parting bead: a narrow piece of timber running the length of the pulley stile, fixed to the centre of the stiles and head, to hold the top and bottom sashes apart, usually fitted into a groove.

Pintle hinge: consists of a pin fixed to a window frame upon which a collar attached to the light frame turns or pivots.

Planceer: framed panel below the interior of a window, also called an apron.

Pocket piece: the removable section of timber cut out of the frame, to access the weights.

Pulley: wheel of timber, brass or cast iron, with a housing (box, or case) of timber or cast iron, placed near the top of the stile to enable sash cord to slide through from sash to weight.

Pulley stile: see stile (q.v.).

Quarry: a diamond shaped pane of glass.

Sash: a frame holding either one or several panes of glass, made up of stiles (sides), horizontal bars named top rail, meeting rail and bottom rail and (at most periods) glazing bars.

Sash-window: the term given to a window with two vertically sliding lights which are opened and closed by a counterbalanced weight and pulley mechanism.

Serlian window: see Venetian window.

Shutter: panelled lengths of timber, corresponding to the dimensions of the window-light, in pairs with one or more leaves, side-hung and hinged to fold back into the internal reveal of the window. Shutters are usually housed, i.e. fitted when closed into a purpose built or boxing.

Single-hung sliding sash: a sash-window in which one, usually the lower sash, is counterbalanced.

Staff bead: slim-sectioned timber lengths, fixed to the inner frame of the sash-window to contain inward movement of the inner (bottom) sash.

Stile: the vertical timber members of a window-sash and the sides of the frame. This is termed a pulley stile when in a cased frame fitted with pulleys for counterbalanced weights.

Stoole: an archaic term for a stone or brick window-sill.

Transom: a horizontal staff, of timber or stone, supported by a mullion which (usually) facilitates a taller opening.

Tripartite window: a generic name for a three light window, often a flat-arched adaptation of the Venetian arrangement (q.v.) A late eighteenth-century type with timber mullions is termed the 'Wyatt Window' after one of its proponents, James Wyatt. A leaded window with two mullions (of timber or stone) could also be termed a tripartite window.

Venetian window: a three light window with a round-arched central light flanked by narrow sidelights of approximately one-third the width, which rise to the level of the impost of the arch or to one pane below this. The narrow dividing piers are of masonry. The window may be decorated in the Doric, Ionic or Corinthian order, and given a balustraded apron.

Weight: a lead or cast iron, thin oblong or cylindrical object, attached (by sash cord) to each side of a sash, to counterbalance and enable levered opening. Weights are housed on the inside of the pulley stile, in a weight box, and are accessed by a cavity in the stile wall which is usually blocked by a length of timber called a pocked piece.

APPENDIX ONE

AN INVENTORY OF CHARACTERISTIC BUILDINGS OR THOSE CONTAINING IMPORTANT WINDOWS (LISTED IN CHRONOLOGICAL ORDER)

Ormond Castle, Carrick-on-Suir, Co. Tipperary *(plate 1)*

*c.*1565

Patron: Thomas Butler, 10th Earl of Ormond

Current state: Under restoration work by the Heritage Service

Architectural description: A seven bay two storey house with dormer attic, on a U-plan, with projecting central entrance bay; attached by symmetrical returned wings to earlier castle buildings, with a projecting bay to the side of the east wing. *Important features of the fenestration:* There are regularly spaced three-light mullioned stone windows, with depressed elliptical heads and stone hood-moulds. The projecting bays have multiple lights. The ground floor windows were enlarged at unknown date (were probably defensive loops). The ruined castle contains the remains of an oriel window brought out on a cone, unique for Ireland. As noted by Fenlon, the fenestration of the gallery is taken directly from de l'Orme, in which it is recommended that openings on one side of a room light the solid wall opposite. *Particulars of the windows:* The present lights are of timber, in small square panes; these may date from the early 19th-century. There are several decorative patterns in timber to the bay over the entrance and that at the west end of the gallery, which may be stylised references to the Tudor Rose and be copies of original leaded glass patterning. Much of the glass is crown. The original glass was ordered from Antwerp, in 1567. The stone frames have had repairs, most being substantially replaced. The mullions are chamfered and there are no external sills.

Sources: Craig, *Ireland*, p.114

Fenlon, *Ormond Castle*

Loeber, in *Architectural History*, vol. 22, 1979, pp.45-63

O'Brien and Guinness, *Great Irish Houses and Castles*, pp.38-9

Kanturk Castle, Co. Cork *(plate 2)*

Before 1609

Patron: MacDonough MacCarthy, Lord of Duhallow

Current state: Ruined, stabilisation has been carried out by the Heritage Service

Architectural description: An oblong four storey tower-house with angled flanking towers, which was never completed. *Important features of the fenestration:* There are regularly arranged mullioned and transomed windows; the south front windows have three mullions, other elevations have two, while the towers have a single mullion and transom. This was the earliest tower-house to use such classical proportioning in the fenestration. *Particulars of the windows:* They are rebated to take glazed lights. The hood mouldings have returned corners.

Sources: Bence-Jones, *Burke's Guide*, p.162

Craig, *Ireland*, p.117-20

Leask, *Irish Castles,* p.126

Smith, *The Ancient and Present State of Cork*, vol. 2, p.292, illustrated

Joymount, Carrickfergus, Co. Antrim *(plate 7)*

1610-18

Patron: Sir Arthur Chichester

Current state: Demolished *c.*1768; one gatehouse survives in part, built into the later Town Hall. Two contemporary drawings survive.

Architectural description: A large Elizabethan manor house, of three storeys, with double-height entrance and full-height bay windows to the rear elevation. *Important features of the fenestration:* The windows were regular and generous, arranged in full-height bays to the rear. A very large pair of windows was set above the entrance. *Particulars of the windows:* There were two mullions and transoms per hoodmoulded window, as drawn by Phillips. Brereton commented, "it is a most stately building, only the windows and rooms and whole frame of the house is (sic) over-large". de Rocheford thought that it had "as many windows as there are days in the year".

Sources: NLI Ms 660, Thomas Phillips, drawings of fortifications, 1685

NLI Ms 2742 (4), Plans des Fortifications, by Goubet

Faulkiner, *Illustrations of Irish History* (Brereton and de Rocheford), pp.368-9

Jope, *Guide to Carrickfergus Castle*

Pinkerton, in *UJA*, vol. ii, p.1

Portumna Castle, Co. Galway ***(plate 3)***

*c.*1618

Architect: possibly William Boughton

Patron: Richard Burke, 4th Earl of Clanrickarde

Current state: Ruined by fire, 1826; an ongoing restoration programme is in place

Architectural description: A large oblong six bay three storey over basement castle with flanking towers. *Important features of the fenestration:* There are regularly positioned windows, which are mullioned and transomed in stone. Most are four light windows, but the first floor windows have two mullions. *Particulars of the windows:* All the internal reveals are splayed and all windows recessed. Oval lights remain over doorcase and to front flankers, which possibly were not glazed but used for ventilation.

Sources: RIA Ms 3-D-4, measured drawings, undated (18c)

Bence-Jones, *Burke's Guide*, pp.233-4 and 301

Craig, in Colvin and Harris, *The Country Seat*, pp.36-41

Loeber, *Biographical Dictionary*, p.25

O'Brien and Guinness, *Great Irish Houses and Castles*, p.18

Donegal Castle, Co. Donegal ***(plate 4)***

[Castle of 1474, remodelled c. 1563] additions *c.*1623

Patron: Sir Basil Brooke

Current state: Stabilised ruin, in the care of the Heritage Service

Architectural description: A medieval tower house with three storey domestic addition, *c.*1623, at which time a canted bow window and other enlarged windows were given to the tower house. *Important features of the fenestration:* There are mullioned and transomed windows in both castle and house, attempting regularity, and each of the five gables has one mullioned dormer window. *Particulars of the windows:* There are chamfered stone frames with hood mouldings.

Sources: Bence-Jones, *Burke's Guide*, p.106

Rowan, *The Buildings of North-West Ulster*, pp.239-40

Wilkinson, *Practical Geology*, p.123, fig 49

Lismore Castle Co. Waterford ***(plate 5)***

Enlarged and rebuilt, 1630s

Patron: Richard Boyle, first Earl of Cork

Current state: Inhabited, in domestic use

Architectural description: A large early 17th-century plantation castle of extensive connected ranges, mostly rebuilt in the early and mid-19th century by William Atkinson and Joseph Paxton with Tudor and Gothic details. *Important features of the fenestration:* All of the eight and twelve light mullioned and transomed stone windows of the 1630s remain to a relatively untouched range, arranged in a regular pattern to river front, and at half landings lighting a stair projection onto the courtyard. *Particulars of the windows:* There are no sills or hood mouldings. All presently have early 19th-century lights with metal-framed opening casements. Ryland commented "the windows, composed of large squares of glass, each pane opening on hinges, combine accommodation with harmony of appearance".

Sources: NLI Lismore Papers; extracted by Prof. Ann Crookshank; copies in the IAA

Loeber, *Biographical Dictionary* (various references)

Ryland, *History and Antiquities of Waterford*, p.346

Old Bawn, Tallaght, Co. Dublin ***(plate 8)***

*c.*1635, substantially rebuilt during the Interrugnum

Patron: for Archbishop Bulkelly

Current state: Demolished early in the 20th century, the ruins bulldozed in the 1980s

Architectural description: A two storey H-plan house, with high, gabled roofs and dormer attic. *Important features of the fenestration:* The quite regularly arranged windows were of almost square proportion, though not all were the same size. *Particulars of the windows:* The original windows were mullioned, with oak frames and outward opening casements, and slate sills. The house retained diamond pane leaded-lights until late 18th century at least, as Cooper took note of the "old-fashioned leaded windows". Handcock saw "a curious coloured" stained-glass stairwell window. Leask measured and described the window timbers and surrounds of smooth plaster quoined architraves which survived under subsequent layers of plaster.

Sources: Leask, *Irish Castles*, pp.149-150 (illustrated)

Leask, in *Studies in Building History*, pp.243-250

Handcock, W., *The History and Antiquities of Tallaght* (Dublin, 1899), p.59

Leask, in *JRSAI* no.43, 1913, pp.314-325

Vicars, in *JCKAS* vol. v, no.4, 1907, p.229 et seq

NLI Ms 772 (2) transcript of Austin Cooper's diaries

Jigginstown, Naas, Co. Kildare *(plate 6)*

1637

Architect: possibly John Allen

Patron: Thomas Wentworth, Earl of Strafford

Current state: In ruins

Architectural description: A exceedingly long, single storey over part basement red-brick house, with taller projecting flankers to both north end corners. *Important features of the fenestration:* The windows are extremely large, of differing widths and heights, and quite regularly spaced, with elements of classical detailing in brick. Some windows are almost square. There is a very high ratio of window to wall. *Particulars of the windows:* The grooves for recessed glazing are evident. Apparently there were timber mullions and transoms, the windows divided horizontally and vertically at least twice. The sills are on a moulded brick string course. There are flat-arched brick lintels, with widely splayed voussoirs; to the east elevation some windows have a moulded undulating pattern to the voussoirs. The basement windows were mullioned in stone, and rebated for glazing, with external iron stanchions.

Sources: Craig, in *JCKAS*, vol. xv - 1, 1971

Loeber, in *Architectural History*, 22, 1979, pp.49-63

- in *IGSB*, vol. xiii, nos. 2-3, 1970

Leask, in *Studies in Building History*, pp.243-50

Vicars, in *JCKAS*, vol. i, no.1, 1891

Richhill, Co. Armagh *(plate 18)*

Mid 17th century

Patron: Edward Richardson

Current state: Inhabited, private house

Architectural description: A two storey U-plan house with dormer attic and stairwell projecting to rear. This archaic plan lends hesitancy to dating the house. *Important features of the fenestration:* All windows excepting those on the stairwell are 19th century; the original sizes

were apparently altered, though the wide piers between regularly set windows may reflect an original caution in the use of many or large openings. There are three horizontally set stairwell windows. The dormer windows are in 'Holborn' gables. *Particulars of the windows:* The original massive oak-lined stairwell window embrasures survive, with corner wedges. The window-frames and mullions have been removed since the 1960s.

Sources: Bence-Jones, *Burke's Guide*, p.241

Dixon, H., *Ulster Architecture* (UAHS, 1975), p.25

ffolliott and de Breffny, *Houses of Ireland*, pp.63-5

Eyrecourt, Co. Galway *(plate 19)*

after 1660

Patron: Col. Eyre

Current state: In ruins

Architectural description: A seven bay two storey over basement double pile house with dormer attic and advanced centre bay with Baroque doorcase. *Important features of the fenestration:* There are regularly positioned large windows with a vertical emphasis. *Particulars of the windows:* There were oak framed cross-windows with fixed leaded-lights, with an embellished egg and leaf carving to the solid frames of the windows flanking the doorcase. Some are still in situ (one stile is in storage). Cumberland noted that "not one of the windows of (Lord Eyre's) castle was made to open". Fine-grade plaster in a quoined pattern surrounds all the windows. There are external iron bars to the basement windows. Sashes with Gothic detail were inserted into the original frames in mid-19th century, the sawn frame members still visible.

Sources: Bence-Jones, *Burke's Guide*, p.122

Craig, *Ireland*, pp.144-6

- *Classic Irish Houses*, pp.5,7 and 15

Cumberland, R., *Memoirs*, vol. i, pp.278-9

Loeber, in *IGSB*, Jan-Jun 1973, p.36

- and O'Connell, in *Irish Arts Review*, 1988

Glin et al, *Vanishing Country Houses*, p.72

Waringstown, Co. Down ***(plate 17)***

After 1667, possibly 1673-4, with subsequent enlargements and alterations

Architect: possibly James Robb

Patron: William Waring

Current state: Inhabited, private house

Architectural description: A three storey U-plan house with square 2 storey corner turrets, with 2 storey wing to rear of south side. The third storey and turrets were added in the 1690s or early 18th century. *Important features of the fenestration:* There is a regular but slightly provincial arrangement of the front elevation, and irregular side elevations, with 'Holborn' gabled dormer windows. *Particulars of the windows:* The original cross-windows with fixed and casement lights are retained to the sides, ground floor, and re-entrant of the wings, on the first floor. Early mullioned sash-windows exist on the upper floor side elevations. A horizontally set timber casement window is at one rear wing. There are flush, exposed frames with unhung sashes to front, having external panelled shutters.

Sources: Bence-Jones, *Burke's Guide*, p.28

Archeological Survey of Co. Down, pp.437-8, pls. 138, 141

Pierce et al, *Taken for Granted*, pp.163-4

Jope, in *UJA*, 1960, pp.97-124

Uncatologued papers in the house (seen by Dr Toby Barnard)

Ballinderry Middle Church, Co. Antrim ***(plate 25)***

*c.*1668

Patron: Bishop Jeremy Taylor

Current state: In use, restored *c.*1902

Architectural description: A small, single cell Anglican church, with gallery accessed by external stone steps. *Important features of the fenestration:* The "very late perpendicular windows" (Craig) are evenly spaced in the nave. *Particulars of the windows:* There are three-light oak framed mullioned windows to the side elevations and a five-light mullioned and transomed chancel window. These have timber glazing bars with quadrant mouldings, and similar mouldings to the interior of the mullions. Fagan noted the windows of "the old fashion, the casings of wood, strong and chunky". One central hopper light to each window has an iron-framed grille. There is now bullion glass to all panes. The south side and chancel windows were remade recently in oak, reglazing the bullion glass; those of the north side are original.

Sources: Brett, *Buildings of Antrim*, no.25, p.30

Craig, *Ireland*, p.149

Fagan, T., *Ordnance Survey Memoirs*, 1838 (quoted by Brett, in *Antrim*, p.30)

Ballybritten Castle, Co. Offaly *(plate 21)*

Medieval tower-house with late 17th-century and *c.*1740 additions

Current state: Inhabited, private house

Architectural description: A five bay two storey house, *c.*1740, incorporating a late 17th-century house in the form of a wing which is attached to the tower-house at the rear. *Important features of the fenestration:* There are regularly placed windows to the 18th-century house; the fenestration of the 17th-century house, seen to the side, appears to have been altered when the house was enlarged. *Particulars of the windows:* A two light mullioned and dowelled oak frame, with oak bars remains, recessed and set low in party wall between the 17th- and 18th-century buildings; the exterior is visible. The tooled limestone window-sills of the 18th-century house are sloped in a quadrant shape. Early 18th-century stairwell sashes survive.

Sources: Crookshank and Glin, *The Watercolours of Ireland*, p.145; illustration dated 1837

No. 28 The Parade, Donaghadee, Co. Down *(plate 22)*

Late 17th century

Current state: Inhabited house, the building to which the window belonged is now demolished

Architectural description: A terraced house of 17th-century origin, originally single storey and raised to two storeys in the early 18th century. *Important features of the fenestration:* A gable window remains of the adjoining house, which was blocked up when no. 28 was raised. *Particulars of the windows:* This three light window has a mullioned and dowelled oak frame, with oak bars (one remaining) and the remains of one internal shutter on a pintle hinge.

Royal Hospital, Kilmainham, Dublin *(plate 16)*

1680 -1684

Architect: William Robinson

Patron: James Butler, first Duke of Ormond

Current state: Works were carried out by Francis Johnston in the early 19th century. It was restored in the mid-1980s to its early 19th century appearance and converted to a museum in 1991.

Architectural description: A large, two storey classical hospital, built in four ranges around a courtyard, with dormer attics, and with arched baroque entrances to the centre of each front. The ground floor of the courtyard is arcaded on three sides. *Important features of the fenestration:* There are regularly punctuated windows on both floors of a similar height. The dormers follow this regularity. There are double-height windows to the North front and a stone mullioned east chapel window with Gothic-Baroque tracery in a style used elsewhere by Robinson. *Particulars of the windows:* Originally the windows were timber-framed lead-lights with opening casements. Rubbed brick Boswell window architraves were plastered and stone sills were inserted by Johnston. Loveday wrote that "ye windows (were) faced with brick". The windows of the master's lodgings may have been sashed originally. The earliest reference to sash-windows dates to 1698, concerning repairs to the chapel. All the windows are flat-arched apart from the semi-circular-arched north front windows. The present window sashes have horns, and some contain cylinder sheet and drawn glass.

Sources: PROI, RHK Governors' Minutes, 1/1/1-33

Barry, Siuban, *Extracts from the Governors' Minutes*

Costello, Murray and Beaumont, *The Royal Hospital, Kilmainham*

Craig, *Dublin*, pp.58-70

Igoe, V and O'Dwyer, F., 'Early Views of the Royal Hospital, Kilmainham', in *Irish Arts Review*, 1988, pp.78-88

Loveday, *Diary of a Tour*, p.56

McParland, in *Country Life*, 9 and 16 May 1985

Southwell Gift Houses, Kinsale, Co. Cork *(plate 24)*

1682

Architect: possibly Thomas Smith

Patron: Sir Robert Southwell

Current state: Inhabited as almshouses

Architectural description: A small group of three two and single storey almshouses arranged around three sides of a courtyard garden. The two storey house, with classical doorcase in brick, faces the entrance gate. There are dormer attics to the single storey houses. *Important features*

of the fenestration: There are regularly arranged, vertically proportioned mullioned and cross-mullioned windows to the storey house, the larger windows to the upper floor. The single storey houses have single rectangular lights, with corresponding dormers. Most rear elevation windows have been blocked up. *Particulars of the windows:* Some original oak lintels remain to the single storey houses, with cast-iron quarry-glazed lights, containing crown and sheet glass in timber subframes. The present lights are inward-opening casements. The dormers were reroofed with segment arches in 1975 instead of swept roofs.

Sources: Craig, Ireland, p.203

ffolliott and de Breffny, *The Houses of Ireland*, p.48

IGSB Jan-Mar 1969, pp.16 and 23

Loeber, *Biographical Dictionary*, pp.101-2

Dublin Castle, S. E. Range, Upper Yard *(plate 20)*

*c.*1685

Architect: William Robinson; carried out by William Molyneux

Current state: Mostly rebuilt during the 18th century, known from drawings

Architectural description: Two designs exist of two storey ranges of administration buildings with classical features. One is eleven bays long with a dormer attic, and an arcaded ground floor, the other is a five bay design with a central pediment and first floor balcony. Only the design containing the arcade was built on a site which corresponds to the present South East range (named by the Architect 'great New Buildings on piers and arches'). *Important features of the fenestration:* Both show a regular arrangement of the windows, in which the piers dividing the openings are the same width or less than the opening. *Particulars of the windows:* There are cross-windows and mullioned dormer windows drawn on these designs. No sills or classical ornament is depicted and the window-light type is unknown.

Sources: Brooking, *A Prospect of Dublin, 1728* (vignette)

Cornforth, in *Country Life*, July 39, 1970, p.284 et seq

Loeber, in *IGSB*, Jan-Jun 1973, pp.11, 13 and 15

Maguire, in *JRSAI* vol. 104, pp.5-14

- in *JRSAI* vol. 115, pp.13-39

Assolas, Co. Cork *(plate 23)*

Medieval tower-house with late 17th- and 18th-century additions and alterations

Current state: Inhabited, in guest house use

Architectural description: Contains a truncated tower house to the north front, of two storeys with gabled attic. This was added to after 1714 and in the late 18th century when the entrance was changed to the west front. *Important features of the fenestration:* There are three regularly spaced tall, narrow windows arranged above the original entrance. *Particulars of the windows:* These windows have semi-circular-arched heads with early exposed box frames and heavy sashes, the glazing bars made in two pieces. Many panes of crown glass survive.

Sources: Bence-Jones, *Burke's Guide*, p.14

ffolliott and de Breffny, *The Houses of Ireland*, pp.75, 92

Healy, J. N., *The Castles of Cork* (Cork and Dublin, 1988) p.299

Smith, *Ancient and Present State of Cork*, vol. 2, p.299

Doneraile Court, Co. Cork *(plate 35)*

1690s to 1725, raised 1756-8, with later additions

Architect: Isaac Rothery

Patron: St. Leger, Viscount Doneraile

Current state: Restoration ongoing since 1976, now in the care of the Heritage Service

Architectural description: A seven bay three storey over basement classical mansion of the end of the 17th century, with top floor finished by 1725 but raised in the 1750s. Subsequent extensions include bowed ends added in the early 19th century. There are remnants at basement level of an older castle. *Important features of the fenestration:* The main and first floor windows are of similar height, with a slight concession to classical grading in the smaller top floor windows. *Particulars of the windows:* The basement windows are mullioned in stone, even on the early 19th-century extensions, with no chamfer to the mullion; the design probably taken from the remaining blocked earlier castle window. One original sash-frame survives in storage in the house. All the sashes are late 18th century (some of hardwood) or recent replacements. There are full sills in original and replacement frames.

Sources: Bence-Jones, *Burke's Guide*, pp.105-6

Georgian Society Records, vol. v, p.82

IGSB, vol. xxxi, 1988, p.20

O'Brien and Guinness, *Great Irish Houses and Castles*, p.50-1

St. Leger Household and Building Accounts, IAA

Kilmacurragh, Co. Wicklow *(plate 36)*

1697 (this date is used by the family; no corroboration has been found)

Architect: possibly William Robinson

Patron: Thomas Acton

Current state: Derelict, becoming ruinous

Architectural description: A five bay two storey over basement house with dormer attic and a pediment over the central three bays. Single storey wings were added in 1847-8, replacing or incorporating earlier wings. *Important features of the fenestration:* There are regularly organised and vertically proportioned windows to both the original house and the wings, of the same height on each floor. *Particulars of the windows:* Original oak sashes and frames, with exposed frames, are still in place. There are nine panes per sash, with quadrant-moulded two-piece glazing bars, with mitred joints. Single-piece glazing bars are also present in the original house and to the extension; those in the original house may be of an early date. There is one remaining horizontally sliding dormer sash. The shutters are backed by iron in straps or sheets. A mullioned basement window survives, with later sashes. The sills are moulded in the Baroque fashion.

Sources: Acton Estate Papers

Bence-Jones, *Burke's Guide*, p.174

Craig, *Classic Irish Houses*, pp 64-5

Marsh's Library, Dublin *(plate 37)*

1701-04, extended after 1707

Architect: William Robinson

Patron: Archbishop Narcissus Marsh

Current state: In library use

Architectural description: A two storey library with apartment and reading room, with L-shaped addition after 1707, to form a U-plan. Restored in the 1860s, with some alterations. *Important features of the fenestration:* There are regularly arranged vertically-orientated windows to all facades. *Particulars of the windows:* Original sash-windows survive to the

librarian's apartment (of the earliest phase of building) on the ground floor to the courtyard elevation, with flush and exposed frames. They have twelve pane sashes with two-piece astragal glazing bars. The upper sash is constructed as part of the frame and the lower sash retains wooden pulleys. Very many panes of broad and crown glass remain. One opening was converted to window in the early 18th-century, and has a wider box frame and larger glazing bars. There are weatherboard sills, which probably date from the restoration, and no stone sills.

Sources: Craig, *Ireland*, p.162

- *Dublin*, pp.66-7

Guinness and O'Brien, *Dublin, A Grand Tour*, pp.43-5

Loeber, *Biographical Dictionary*, p.96

McCarthy, in *DHR* vol.xxix-1, pp.2-23

Ross, R., in *Country Life*, May 22, 1975, p.1336

Castlelough, Co. Tipperary *(plate 38)*

*c.*1712, extended *c.*1870

Patron: Parker-Hutchinson

Current state: Inhabited, private house

Architectural description: A two storey over basement house with dormer attic, the front of which is now masked by a two storey Victorian extension. The basement incorporates the masonry of an earlier building. *Important features of the fenestration:* There are irregularly positioned and sized windows to the rear and sides of the original house, with very tall central stairwell window. *Particulars of the windows:* Single hung sash-windows survive, set recessed with exposed boxes, on stone sills. These have small panes in mitred two inch glazing bars, and full sills. There are window seats to both rooms and stairwell and raised and fielded shutters to stairwell, basic panelled shutters to the rooms. The sashes are not hung but held open with quadrant stops.

Trinity College Library, Dublin *(plate 41)*

1712 - 1732

Architect: Thomas Burgh

Current state: In library use

Architectural description: A very long three storey block with three bay terminating pavilions and arcaded ground floor. The aesthetic was altered in the late 19th century when the arcade was

filled in, a barrel roof replaced the original, and the walls were refaced. *Important features of the fenestration:* The external aesthetic of the building is formed solely by the ordered tiers of windows, with a concession to the Palladian style in the smaller height of the top floor windows. *Particulars of the windows:* Most sashes and frames are of the late 18th or early 19th century, with many panes of blown glass. One original window survives to the gable entrance, partly blind, with mitred ovolo glazing bars and modern glass. There is an original segmentally arched overdoor light with timber glazing bars to the gable entrance.

Sources: NLI 747 TB, Joseph Tudor illustration, *c.*1753

Craig, *Ireland*, p.162-3

- *Dublin*, p.95-6

Crookshank, A., *The Long Room* (Dublin, Gatherum series, 1976)

McParland, in *Country Life*, May 1976, p.1166, p.1242, p.1310

Skiddy's Almshouse, Shandon, Cork *(plate 39)*

1718-9

Patron: Mr Clement Skiddy or Scudamore

Current state: Restored 1975, set in private flats

***Architectural description*:** A two storey L-plan almshouse with dormer attic, with open arcade to courtyard elevations. *Important features of the fenestration:* The windows are regularly punctuated on all elevations. The original appearance has been altered by the blocking of every second window and alterations in the setting of the dormers, including the removal of some. *Particulars of the windows:* There are two-light sashes with timber mullions, which were never hung. The sashes are of the late 18th or early 19th century but emulate the form of the originals as seen in a print of 1721. The frames are set recessed but with exposed boxes. They may be original as there are full sills. At present there are no internal shutters nor timber lining. The dormers are wholly late 19th century in type.

Sources: NLI 200TA, The West Prospect of Betridge's and Skiddy's Almshouses, 1721

Craig, *Ireland*, pp.203, 205

Skiddy's Almshouse 1719 AD, IAA

Smith, *Ancient and Present State of Cork*, vol. 2 pp.388-390

Castletown, Co. Kildare *(plate 40)*

Begun between 1719 and 1722

Architect: attributed to both Alessandro Galilei and Edward Lovett Pearce

Patron: William 'the Speaker' Conolly

Current state: Restoration ongoing by the Heritage Service

Architectural description: A large thirteen bay three storey over basement Palladian mansion with curved flanking walls and projecting pavilions. *Important features of the fenestration:* There are regularly positioned windows to all elevations, with smaller windows to the top floor. The window pediments were added before 1746 (McCarthy). The reception room windows to the main front were lengthened in the late 18th century. *Particulars of the windows:* Original windows survive to the basement with cambered arches, heavy mitred two part glazing bars and many blown glass panes. The gable end windows of the top floor are similar in detail. One original internal horizontal sash exists, lighting a back stair. Both early and later 18th-century sashes are single-hung. There are two types of later sash, one extremely fine, in the lowered front elevation dining room windows. An original half-glazed door survives in the basement.

Sources: Craig, *Ireland*, pp.180-82

Cruickshank, *Guide to Georgian Buildings*, pp.56-7

Georgian Society *Records*, vol. v, p.40 et seq

Griffin, Castletown Report, 1994

Loveday, *Diary of a Tour*, p.48

McCarthy, in *The Connoisseur*, Feb 1981, pp.158-61

O'Brien and Guinness, *Great Irish Houses and Castles*, pp.54-9

The Brazen Head Inn, Dublin *(plate 42)*

Current state: In use as a public house

Architectural description: A three storey L-plan inn, first mentioned in 1668, with many subsequent alterations and extensions. *Important features of the fenestration:* The front is unevenly fenestrated; the original configuration has possibly been altered. The windows have vertical proportions. *Particulars of the windows:* There is a semi-circular-arched stairwell window to the rear on the first half-landing, with full-width rectangular inward-opening casement (now stuck in position) and separate arched top sash set to the outside of the casement (in the manner of a top sash) held in place by stops and outer lining. There are thick glazing bars

with dies to the joints and many bullion panes of glass, some with 18th-century scratched graffiti, the earliest dated 1724. The glazing bars appear to be constructed in two parts.

Sources: Craig, *Ireland*, p.161

Mitchell, *Vanishing Dublin*, p.44-5

Beaulieu, Co. Louth *(plate 43)*

Fitted out 1722 (building possibly *c.*1660-7)

Architect: possibly John Curld

Patron: Lord Ferrard

Current state: Inhabited, private house

Architectural description: A seven bay two storey Dutch-influenced mansion with the end bays broken forward and a dormer attic in a high roof. There is a small late 19th-century rear extension. *Important features of the fenestration:* The windows are set in an ordered arrangement to the entrance and garden fronts (but not the north side or rear). The windows are of similar height to both storeys. *Particulars of the windows:* All of the openings of the main elevations have Boswell architraves and moulded brick sills of very high quality. The sashes and frames of the main elevations are mid 19th century. The windows to what was the original main stairwell (to rear) appear to be of the 1720s, with single piece ovolo glazing bars, the lower sashes open using quadrant stops. The internal gallery windows lighting the hall are similar in design, with crown glass to most panes. Ferrard relates that the gallery windows were made in 1722. There is one low horizontally set window, with timber mullion to rear elevation, having cast-iron casement lights, its age unknown.

Sources: NLI P.3753, letter of Lord Ferrard, 22 July 1722; (see *Clements Mss*, 8th Report, HMC, pp.343-6)

NLI Ms 773 (8), f. 2, Austin Cooper (1783)

Casey and Rowan, *North Leinster*, pp.154-6

Georgian Society *Records*, vol. v, p.97

Girouard, in *Country Life*, Jan 1959, vol. cxxv, p.106, p.156

Guinness and Ryan, *Irish Houses and Castles*, pp.240-47

Sadleir and Dickinson, *Georgian Mansions*, p.17

Ballyhaise, Co. Cavan ***(plate 52)***

c. 1730-33

Architect: Richard Castle

Patron: Brockhill Newburgh

Current state: In use as an agricultural college

Architectural description: A seven bay two storey over basement Palladian mansion, with full-height oval bow to rear elevation. This was extended at both ends and to the rear in the 19th century. *Important features of the fenestration:* There are regularly positioned windows to the front, with little difference in height between main and first floor openings. The rear windows are graded in height, with noticeably more depth between the main and first floor windows than those of ground-level basement and main floor. *Particulars of the windows:* There are late 18th- or early 19th-century sashes and frames to most windows, with iron-backed shutters to the ground floor front elevation. The original sashes, frames and shutters remain to the rear elevation basement windows, with heavy, blocked glazing bars, small panes and full sills. All of the rear elevation window are arched, those to basement and main floor having semi-circular arches, those to top floor having segmental arches and all of the windows are recessed.

Sources: PROI M2533, Henry, *Hints*, p.445

Bence-Jones, *Burke's Guide*, p.22

Craig, *Ireland*, p.186-7

Cruickshank, *Guide to Georgian Buildings*, pp.60-1

Knight of Glin, The Irish Palladians, pp.110-2

McCarthy, in *The Connoisseur*, Feb 1981, pp.159-61

Mount Ievers, Co. Clare ***(plate 56)***

1730-37

Architect: attributed to John and Isaac Rothery

Patron: Col. Henry Ievers

Current state: Inhabited, private house

Architectural description: A tall, seven bay three storey over basement mansion with central doorcase. Both main and garden fronts are of a similar design, but with different facing materials. *Important features of the fenestration:* The windows are regularly ordered to entrance and garden elevations, with the top floor windows of less than half the height of the main floor

windows. *Particulars of the windows:* Original sashes and frames remain to some entrance front and basement windows, with small panes, mitred ovolo glazing bars and full sills (many cut down to half sills). These were single hung originally to the lower sash. Some lead weights are still in situ. Many sashes were replaced *c.*1850 (and later) and in recent years to replicate the originals, but the replacements have horns. There is an oval window at the basement level.

Sources: Craig, *Classic Irish Houses*, p.62

Georgian Society *Records*, vol. v, pp.23-38

Girouard, in *Country Life* 8 Nov 1962

Guinness and Ryan, *Irish Houses and Castles*, pp.55-59

Knight of Glin, The Irish Palladians, pp.224-6

Bonnettstown Hall, Co. Kilkenny *(plate 57)*

1737

Patron: Samuel Matthews

Current state: Inhabited, private house

Architectural description: A six bay two storey over basement house, with tripartite entrance. *Important features of the fenestration:* There is regularly ordered fenestration to all sides, with a pair of larger stairwell windows to the centre of the rear elevation. The windows of both main floors are of the same height. The treatment of the centre bay front is slightly awkward in order to accommodate the blind arch of the doorcase in between the central bays of the upper floor. There are rusticated dressings to the front ground floor windows. *Particulars of the windows:* There are original sashes and frames to three gable end windows, two of which were unblocked *c.*1981. These are of oak, with mitred ovolo glazing bars and slide but have no pulleys. There are later horizontally sliding windows to basement, with quarry glazing. Very many panes of crown glass remain in all windows.

Sources: Bence-Jones, *Burke's Guide*, p.45

Bush, *Bonnettstown: a house in Ireland*

Craig, *Classic Irish Houses*, p.79

ffolliott and de Breffny, *Houses of Ireland*, p.108

Howth Castle, Co. Dublin *(plate 55)*

medieval castle, works of *c.*1738

Architect: attributed to Francis Bindon

Patron: St. Lawrence family

Current state: Inhabited, private house

Architectural description: An irregularly planned castle of different periods, in several ranges, predominantly of two storeys over basement. *Important features of the fenestration:* The windows to the entrance range are irregularly placed, with openings apparently of a 17th-century format, with some enlarged or altered in the 1730s. The current fenestration is shown clearly in a painting of *c.*1740 in the house. *Particulars of the windows:* Sashes and frames of *c.*1738 survive to the stairwell and rear of the main range and to the old kitchen, with blocked ovolo glazing bars. The half sills and parting beads may indicate later alterations, perhaps of the late 18th-century date when the front elevation sashes were changed. One engraved pane on the stair window is signed and dated 1745.

Sources: NLI Ms 772 (2), Austin Cooper

Bence-Jones, *Burke's Guide*, pp.155-6

Georgian Society *Records*, vol. iv, pp.1, 8-10

Hussey, in *Country Life*, 6 and 13 Sept 1930

O'Brien and Guinness, *Great Irish Houses and Castles*, pp.25-7

No. 13 Henrietta Street, Dublin *(plate 58)*

*c.*1743

Architect: attributed to Nathaniel Clements

Patron: Luke Gardiner

Current state: Inhabited, private house

Architectural description: A four bay four storey over basement terraced town house. *Important features of the fenestration:* There are regularly ordered windows to both front and rear, but with subsequent alteration of the window placing to the left-hand bay at the rear. *Particulars of the windows:* Original frames with full sills remain to most windows, with original sashes to two front basement windows, having heavy ovolo glazing bars and square panes. Some similar sashes from the top floor are retained in the house. There are very fine oak sashes of the 1760s to many windows at the front.

Sources: Crimmins, Henrietta Street, a conservation study, p.36

Georgian Society *Records*, vol. ii, p.10

Ledwithstown House, Co. Longford *(plate 53)*

*c.*1746

Architect: attributed to Richard Castle

Patron: Ledwith family

Current state: Under restoration as a private house

Architectural description: A square three bay, two storey over basement house, with pedimented tripartite doorcase. Dormer attic windows were retained until 1857. *Important features of the fenestration:* The windows are widely spaced and regularly set, with evident Palladian influence in the spare allowance of windows. *Particulars of the windows:* Many original windows remain, with thick mitred glazing bars made in two-pieces with ovolo moulding while the others are modern facsimiles. There are half sills, apparently original. The windows are single hung, with timber pulleys remaining. The basement windows are segmentally arched.

Sources: Bence-Jones, *Burke's Guide*, p.183

Casey and Rowan, *North Leinster*, pp.142-3

Craig, *Classic Irish Houses*, pp.84-5

English, in *The Irish Ancestor* vol. v, no. 1, 1973

Knight of Glin, The Irish Palladians, pp.120-1

Rathfarnham Castle, Co. Dublin *(plate 62)*

*c.*1583, remodelled 1740s and 1770s

Architect: the 1770s work is by Chambers, probably supervised by James 'Athenian' Stuart

Patron: Adam Loftus, bought 1770 by the Earl of Ely

Current state: National Monument, under conservation

Architectural description: A large three storey over basement Elizabethan castle with corner flankers, and mid- and late 18th-century fenestration and interior. *Important features of the fenestration:* There are widely spaced classically proportioned windows to all floors and elevations and a full-height bow to the east elevation. *Particulars of the windows:* The main floor rooms have sashes and frames of the mid-18th century and later; the sashes of the 1770s

are of plate-iron and hardwood. One basement window has a surviving square-paned timber-framed leaded light with timber window frame; this light is thought to be early or mid-18th century. (It is now on display in the castle.) Two pieces of 18th-century stained glass remain in the hall, leaded into later panels.

Sources: Ball, *History of the County of Dublin*, pp.140-2

Bence-Jones, *Burke's Guide*, p.239

Georgian Society *Records*, vol. v, pp.47, 77-8, 87

McParland, in *Country Life*, Sep 9, 1982

Price, *Diary of an Irish Antiquary*, p.60

Bellinter, Co. Meath *(plate 54)*

*c.*1750

Architect: Richard Castle

Patron: John Preston, M.P

Current state: Inhabited as convent and conference centre

Architectural description: A two storey over basement Palladian mansion, with tripartite doorcase and central niche in a Venetian format to the first floor, and central oval lantern. A pair of two storey pavilions are attached by curved flanking wings. *Important features of the fenestration:* There are regularly placed windows to the entrance and garden elevations. Both ground and first floor windows are of similar height. *Particulars of the windows:* Original windows survive to both basement and lantern, with heavy glazing bars, with square blocks. Some basement window-panes are set horizontally as are those to the lower sashes of some of the lantern windows. Many panes of crown glass remain in all the sash-windows. The reception rooms of the garden front have been replaced with plastic-framed factory windows.

Sources: Bence-Jones, *Burke's Guide*, p.39

Casey and Rowan, *North Leinster*, pp.164-6

Cruickshank, *Guide to Georgian Buildings*, p.61

ffolliott and de Breffny, *Houses of Ireland*, p.86, pp.106-7

West Front and Regent House, Trinity College, Dublin *(plate 60)*

1751-59

Architect: Theodore Jacobsen

Current state: In college use

Architectural description: A long, four storey palace-fronted college, with projecting pedimented central entrance bay and massive, taller terminating pavilions. *Important features of the fenestration:* The whole is regularly fenestrated, with the upper floor windows graded in height. There are Venetian windows to the first floor of the pavilions, and a double-size window over the entrance gate set at half landing level lighting a double-height room. *Particulars of the windows:* There are original sashes and frames to most windows, except those of the entrance bay. The Venetian windows have blind sidelights and arches. The glazing bars are slimmer than the Palladian, with quite square panes and there are half sills.

Sources: Craig, Dublin, pp.180-82

Cruickshank, *Guide to Georgian Buildings*, p.290

Freeman's Journal, Jan 14 1768/9 (anonymous criticism)

JIHC, vol. vi, appendix cclxiii

McParland, in *Country Life*, May 1976

St. Werburgh's Church, Dublin *(plate 61)*

1715-19, rebuilt 1754-59

Architect: of original building, Thomas Burgh. Supervisor of rebuilding, Joseph Jarratt

Current state: In church use

Architectural description: A classical church with double-height, gable-fronted baroque façade, rectangular nave with shallow chancel, and oak gallery to three sides. *Important features of the fenestration:* There are two regularly arranged rows of segmentally arched windows lighting either side of the nave, with the taller windows above the gallery, and a later round-arched east window. The nave windows use the masonry of the 1715-19 building. *Particulars of the windows:* The original windows have the frames recessed into a reveal, with heavy Palladian glazing bars, quite square panes and half sills.

Sources: Hughes, S., *The Church of St. Werburgh* (Dublin, 1889)

Severens, in *IGSB*, 1992-3, pp.3-15

Warburton et al, *History of Dublin*, vol. I, pp.498-501

Bishop's Palace Robing Room, Kilkenny *(plate 59)*

*c.*1756-60

Patron: Bishop Pococke

Current state: Empty, becoming derelict

Architectural description: A single storey over basement garden building with pediment over the three bay front, and end bays curved on plan. *Important features of the fenestration:* The windows of the entrance bay in are in proportion to the façade, but the curved end windows are much wider. *Particulars of the windows:* There are small panes, heavy glazing bars, half sills, and moulded stone sills. The keystones are exaggerated in size. There is a fixed and inward opening casement window to the left end bay, apparently using the original sash members.

Sources: Lanigan and Tyler, *Kilkenny*, p.31

Smithwick, in *IGSB*, 1963, pp.75-96

Leixlip Castle, Co. Kildare *(plate 63)*

Medieval castle, altered and extended early 18th century and *c.*1760

Patron: Primate Stone in possession when *c.*1760 works carried out

Current state: Inhabited, private house

Architectural description: A turreted three storey castle with connecting ranges of buildings (mostly 18th century), forming a rough L-plan. *Important features of the fenestration:* The existing and new buildings were regularly fenestrated in the early and mid-18th century, with some unevenness attributable to differing floor levels. *Particulars of the windows:* There are very tall and narrow sashes and frames of the Queen Anne period to one turret, with two-piece glazing bars. Early to mid-18th-century sashes and frames remain to an extension of this period, to the south of the original castle. Gothic fenestration was given to both new and enlarged windows to the castle and an extension, with pointed windows, octagon-and-diamond panes with two-piece glazing (single-piece bars in the Y-tracery) and unusual overlapping meeting rail detail. (A print of Leixlip of the 1750s shows the building with rectangular, not pointed windows.)

Sources: Bence-Jones, *Burke's Guide*, p.183

Guinness and Ryan, *Irish Houses and Castles*, pp.211-17

O'Brien and Guinness, *Great Irish Houses and Castles*, pp.22-4

The Casino, Marino, Dublin *(plate 73)*

1758-1769

Architect: Sir William Chambers

Patron: James Caulfeild, 1st Earl Charlemont

Current state: National Monument, in the care of the Heritage Service

Architectural description: A two storey over basement classical garden building, designed in the form of a Roman Doric temple. *Important features of the fenestration:* There is one window on two main floor elevations with a door on the third, in scale with the desired single bay appearance (but the fourth elevation has three windows; some are internally divided to light several rooms or are partially blind to match the internal with the external scale). The concealed basement and upper floor windows are regularly positioned. *Particulars of the windows:* There is an original internal overdoor light, which has glazing bars of one inch wide. The hidden sash over the main door is also original. This is concealed in the masonry and hung on pulleys to be pulled down, providing light without draughts while the doors are open.

Sources: Cornforth, in *Country Life*, Feb 4 and 11, 1988

'Dublin Mansion Houses', *Irish Builder*, 1894, pp.50-51

Harris, *Sir William Chambers*, pp.42-5

Howley, *The Follies and Garden Buildings of Ireland*, pp.160-168

Johnston, in *Irish Arts Review*, Autumn 1984

O'Reilly, *The Casino at Marino*

Nos. 23-4 Upper Merrion Street, Dublin *(plate 74)*

*c.*1765

Architect: No. 24 attributed to Christopher Myers

Patron: Lord Antrim on lease from Charles Stanley Monck

Current state: Converted 1997 (with rest of terrace) into a hotel

Architectural description: A pair of four storey over basement terraced townhouses. *Important features of the fenestration:* The façades show regularly spaced classical proportioning. *Particulars of the windows:* Plate-iron and hardwood sashes of very slender proportions remain to the reception rooms of no. 23. There are camber-arched windows with heavy glazing bars to the basement of this house, with carved shutter mouldings and staff beads (the sashes have recently been removed). Similar heavy glazing can be seen to the internal fanlight.

Sources: O'Dwyer, in *IGSB*, 1996-7, p.15

Georgian Society Records, vol. I, p.13

Castletown Cox, Co. Kilkenny *(plate 75)*

1767-71

Architect: Davis Ducart

Patron: Michael Cox, Archbishop of Cashel

Current state: Inhabited, private house

Architectural description: A seven bay three storey over basement mansion, with single storey over basement wings and pavilions forming a courtyard to the rear. *Important features of the fenestration:* There are regularly proportioned windows to all elevations, with lunette windows to the basement. *Particulars of the windows:* Many original windows remain, with idiosyncratic glazing to the heads of the arched windows and narrow glazing bars. There are several types of shutter decoration and all of the windows have full sills.

Sources: Bence-Jones, *Burke's Guide*, pp.76-7

Craig, *Ireland*, p.195

Hussey, in *Country Life*, 7 and 14 Sept, 1918, pp.190, 214

O'Brien and Guinness, *Great Irish Houses and Castles*, pp.98-101

Glin Castle, Co. Limerick *(plate 76)*

*c.*1780-90

Architect: unknown, of the Ducart school

Patron: Col. John Fitzgerald, Knight of Glin

Current state: Inhabited as private and guest house

Architectural description: A three storey mansion with a pair of curved bows to either side of the pedimented main entrance and canted bows to the garden front. The house was castellated and a two storey range of ancillary offices added in the early 19th century. *Important features of the fenestration:* The windows are placed in an orderly fashion, with a wide centre bay to the garden front having two arched stairwell windows at half landing levels. *Particulars of the windows:* There are ordinary sash-windows to the garden front and tooled timber cross-mullioned window frames to entrance front and side, having single-hung sashes and fixed transom lights, which may date from the early 19th century.

Sources: Bence-Jones, *Burke's Guide*, pp.140-1

O'Dwyer, in *IGSB*, 1996-7, p.20

Townley Hall, Co. Louth *(plate 77)*

Designed 1794

Architect: Francis Johnston

Patron: Blayney Balfour

Current state: Inhabited by a religious co-operative

Architectural description: A two storey over basement double pile mansion, with three seven bay fronts and a Grecian Doric portico to the entrance front. *Important features of the fenestration:* There is perfectly proportioned fenestration, necessitating some blind windows, with no adornments. The upper floor windows are very slightly smaller than those of the main floor. *Particulars of the windows:* The windows of both floors have twelve panes, with slim glazing bars and meeting rails. The blind windows are made and glazed in the normal manner. There are fluted fans to the dining room window architraves.

Sources: Bence-Jones, *Burke's Guide*, pp.275-6

Casey and Rowan, *North Leinster*, pp.503-8

Craig, *Ireland*, pp.250, 254, 266

Goslin, B., The Murray Collection of Drawings, MA Thesis, UCD, 1990

Mitchell, in *IGSB*, 1987

The Gilson School, Oldcastle, Co. Meath *(plate 78)*

1824-5

Architect: C. R. Cockerell

Current state: In school use

Architectural description: A five bay, two storey over basement school with three bay pediment and single storey schoolroom wings. There are modern extensions to the rear. *Important features of the fenestration:* The windows to the main house are regularly ordered. There is one large segmentally-arched Wyatt window to each schoolroom wing. *Particulars of the windows:* Most have been replaced with uPVC windows. Two fanlights and the original

girl's school front window remain, the latter having slim glazing bars and small convex horns. The original cast-iron windows to the schoolroom side elevations have been replaced.

Sources: Articles of Agreement for building a house, school and premises at Oldcastle, 1824

Casey and Rowan, *North Leinster*, p.449

Cruickshank, *Guide to Georgian Buildings*, p.297

No. 2, Pery Square, Limerick *(plate 79)*

1838

Architect: the Pain brothers (whole terrace)

Current state: under restoration by Limerick Civic Trust (who have researched the date)

Architectural description: A terraced three bay four storey over basement town house with Doric doorcase and elliptically-arched fanlight. *Important features of the fenestration:* The whole is regularly fenestrated and the doorcase is aligned with the window bays. The basement windows light both mezzanine and lower basement levels. *Particulars of the windows:* There is a complete set of original windows to the main floors (some are replaced in the basement levels). These have with splayed reveals and single panel shutters. The sashes have fine glazing bars and no horns. The first floor windows have the nine sash over six configuration.

Heuston Station, Dublin (formerly Kingsbridge) *(plate 80)*

1845-6

Architect: Sancton Wood

Patron: The Great Southern and Western Railway Company

Current state: in railway office use

Architectural description: A large nine bay, two storey Renaissance palazzo with single storey wings, each having an arcaded tower with cupola. *Important features of the fenestration:* All the elevations are regularly fenestrated. The ground floor windows are segmentally arched and set in recesses. The semi-circular-arched first floor windows have alternate segmental and triangulated pediments. There are semi-circular-arched windows to the wings. *Particulars of the windows:* All of the front elevation windows are designed with margins to the sashes; the other elevations and wings have ordinary six pane glazing. There are full sills.

Sources: Sheehy, J., *Kingsbridge Station* (Ballycotton, Gatherum Series, 1973)

APPENDIX TWO

AN INVENTORY OF WINDOW-GLASSHOUSES (LISTED IN CHRONOLOGICAL ORDER)

Drumfennig Woods, Curryglas, Co. Cork

Dates operative: 1586-8 until after 1597

Glass type: broad glass (see cargo listing below)

Names of owners/important connections/glass-blowers: Set up by Ralph Pillyng and George Longe, assisted by Capt. Woodhouse, who sued for the privilege; Longe was associated with the glasshouse until the last mention of it in 1597. *Contemporary commentaries:* The Calendar of State Papers, Ireland and Patent and Close Rolls of the 1580s refer to Woodhouse's grant, which was for a term of eight years (*CSPI*, November 6 1589). Longe had employed at least twenty-four persons for the space of two years while making trials, at a cost of over £500 (Lansdowne Mss petition, 1589). In 1591 a ship "the John of Padstow" had its cargo recorded: "John Luynt master from Youghall. George Longe Iglishe Merchant dothe enter in the same, six chestes and a half of Bourgony glasse." Salisbury Mss, *c.*1597, contains a petition submitted by Longe, detailing his works.

Sources: Padstow Port Book, 1591, (KRPB 1017/6 2nd Sept), quoted by Longfield, in *Anglo-Irish Trade*, p.126

Westropp, *Irish Glass*, pp.20-24

Lismore? Co. Cork

*Dates operative: c.*1614-18

Glass type: probably broad glass

Names of owners/important connections/glass-blowers: This was an enterprise of Richard Boyle, the Great Earl of Cork. It was set up by William Robson, an English glassmaker, who leased the (then dormant) rights granted to Sir Jerome Bowes in 1611. John Hawys, glassmaker cousin of Robson went to Ireland as the manager in 1613. Boyle's agent in London was Mr Holloway, and the glass was sold by Thomas Leeche, merchant. *Contemporary commentaries:* The *Lismore Papers,* April 5, June 13, August 27, and October 8, 1614, and January 12, February 1, April 8 and November 20, 1615, mention the above names in connection with the glasshouse. In the summer of 1616 a shipment to Leeche was confiscated. Godfrey lists the legal papers which relate to challenges to this enterprise in London.

Sources: Godfrey, *The Development of English Glassmaking*, pp.66, 86-7

Grosart (Ed.), *Lismore Papers*, vol. I,

Ballynegerah, Co. Waterford

Dates operative: furnace started April 1622, to an unknown date

Glass type: broad window glass and drinking glasses

Names of owners/important connections/glass-blowers: This was probably another project of the first Earl of Cork. The glass-blower was named Francois Davy and there was a manager named Mr Sayer. The founder/mixer of glass batches was Hugh Osborne. *Contemporary commentaries:* None survive apart from the account book, but one merchant, William Durant, named in the accounts as a purchaser was enfranchised in Youghal and later worked in Lismore Castle for the Earl of Cork. The glass is described in the accounts as "good clear broad window glass at the rate of 3s per case".

Sources: Westropp, *Irish Glass*, pp.25-30, contains a transcription of accounts of 1622 held at Marsh's Library, Z3.1.31

Birr, Co. Offaly

Dates operative: from 1623 to before 1652

Glass type: probably broad glass and drinking glasses

Names of owners/important connections/glass-blowers: William Parsons, Lord Rosse, was the patron. It was operated by a French (Lorraine) family of glassmakers who came via England, named Bigo; Abraham Bigo was the principal glassmaker. He surrendered the lease in 1627 and it may have later been taken over by Philip Bigo, a relation. *Contemporary commentaries:* Abraham Bigo's lease from Parsons dated 1623 required him to build a stone or brick chimney in the castle of Clonoghill. Boate named this manufactory as having supplied Dublin with window and drinking glasses. Lewis relates "there was also formerly an extensive manufacture of glass (in this area), of which the only remains are the ruins of the glasshouse".

Sources: Boate, *Ireland's Naturall History*, p.162

Cooke, T. L., *The Early History of Birr* (Dublin 1875), pp.41-3, 323-4

Lewis, *A Topographical Dictionary of Ireland*, vol. ii, p.456

Lee, G. L., *The Hugenot Settlements in Ireland* (London, 1936), pp.135-6

Westropp, *Irish Glass*, p.30-1

Glasshouse, Portarlington, Co. Laois

*Dates operative: c.*1670

Glass type: probably broad

Names of owners/important connections/glass-blowers: The glassmaker was Ananias Henzy (de Hennezell) of a Lorraine glassmaking family, the son-in-law of Philip Bigo (see above). The patron of the manufactory was Lord Arlington. Contemporary commentaries: Two letters of November 14 1670 from Henzy and Robert Leigh, Arlington's agent, relate Henzy's difficulties in succeeding in his trials and mentions that he brought several families over to man the glasshouse. (That the enterprise succeeded may be deduced from the remnants of a glasshouse on a farm at Glasshouse townland near Portarlington.) Hylton deduces that Henzy's venture had permanently ceased by 1691.

Sources: CSPI, 1669-70, pp.301-2

Hylton, in Caldicott, Gough and Pittion, *The Hugenots and Ireland*, p.299

Westropp, *Irish Glass*, pp.33, 35

Gurteens, Co. Waterford

*Dates operative: c.*1711-*c.*1740

Glass type: London crown and other glass for windows; possibly plate glass

Names of owners/important connections/glass-blowers: Mr James Fitzgerald appears to have been the agent in London in 1711. John Head, esq. (d.1739) was the owner of the works which operated from c.1728. John Walker, Gurteens, leased land including glasshouse to a Mr Aerenden (?) in 1731. *Contemporary commentaries:* The earliest mention is that prospective workmen were to apply to Mr James Fitzgerald in London for jobs in the "glasswork for making crown glass and plate carrying on in Waterford" (11-15 June, 1711). In 1729 a notice was issued that a glasshouse was now at work. A 1731 advertisement relates the produce, noting that crown and other window glass would soon be made at Mr Head's glasshouse. A notice dated Feb 5, 1740 advertised the property for sale, including pots, tools and "a large parcel of ingredients for crown glass, kelp, etc". A lease dated 1736 refers to the glasshouse; later leases and notices refer to the lands but not specifically to the glasshouse. The 1711 and 1730s operations may not have been connected, but it is highly likely that they used the same glasshouse.

Sources: NLI Ms 24936, Westropp Papers

Westropp, *Irish Glass*, p.68, 209-10 (includes the *British Mercury* and *Dublin Journal* notices, and Registry of Deeds 82-421-58413, 17 May, 1736)

Bachelor's Quay/Abbey Street, Dublin

*Dates operative: c.*1726, with breaks until after 1801

Glass type: bottles and crown glass

Names of owners/important connections/glass-blowers: Richard Stewart, Joseph Nuttall and Dr Richard Helsham (Doctor in Physick), Trinity College agreed with Hugh Boyd of Antrim (glassmaker and colliery owner) to erect a glasswork for bottles and window-glass (deed of September 1725, partnership agreement, March 1726). This was bought by William Deane in 1754, but possibly produced only bottles until 1767, by which time it was part of a larger concern with two connected factories known as the Square Glasshouse and the Round Glasshouse, which were in the amalgamated ownership of Deane and Co. and Hawkshaw and Co. The Square Glasshouse appears to have been taken over in 1759 by Thomas Smith Jeudwin, John Landon and Henry Lunn, and was producing window-glass by 1760. Deane died in 1793, and Lunn was listed as a glass manufacturer at Abbey Street until that year. In 1794 the name of Charles Mulvany appears at this address. *Contemporary commentaries:* A Dublin Journal notice of 1760 and one of May 1767 told of crown window glass for sale. Petitions were made (on behalf of the various owners of the two window-glasshouses at this site) to the House of Commons in 1755, 1761, 1765 and 1768; petitions to the Dublin Society were made in 1755, 1761, 1762, 1767 and 1769. The Dublin Society awarded the stained glass artist, Thomas Jervais, his petition in 1760, ordering that "Messrs Ruttland and Deane do arrange for his use £25 in preparing a furnace and materials proper to carry on his proposals". In 1801 an advertisement stated that a furnace of Mulvany's at this site was adapted for the making of window-glass, but no further notice of it has come to light.

Sources: *JIHC* vol. v, 1749-57, p.231, vol. vi, appendix clxxviii; vol. vii, 1761-4, appendix i-liii and lv; vol. viii, 1765-72, p.248

Meenan and Clarke, *The Royal Dublin Society*, p.250

NLI Ms 24936, Westropp Papers

Westropp, *Irish Glass*, pp.45-7, 51-55, 206-8

Ballycastle, Co. Antrim

Dates operative: 1755 until *c.*1780

Glass type: bottle and crown glass

Names of owners/important connections/glass-blowers: Hugh Boyd, local landlord and industrialist set up this factory. Lunn, Jeudwin and Landon of the Square Glasshouse, Dublin, were in partnership with Boyd from 1764 until about 1771 (although Lunn departed about 1766). Six blowers were employed. *Contemporary commentaries: Pue's Occurrences*, June 8, 1754, noticed that the glasshouse was started. The *Commons Journals* Nov 1, 1755 note a petition from Boyd, who also petitioned the Dublin Society in June 1755. The *Dublin Journal*, Oct 14 1755 notes that bottles are ready, with window and plate glass to follow. The last mention is found in the *Dublin Journal* Oct 13 1771, noting the sale of the bottle house, but a cargo was recorded to Belfast in 1782.

Sources: Bowie, G., *Preliminary Report, Ballycastle Glass Kiln Excavation*, March 1974

Dallat, C., 'Ballycastle's 18th Century Industries', in *The Glynns*, 1974, pp.7-13

Westropp, *Irish Glass*, pp.133 – 136

Westropp papers, NLI Ms 24936

Williams and Co., Marlborough Green, Dublin

*Dates operative: c.*1764 until *c.*1827

Glass type: flint, crown and plate glass

Names of owners/important connections/glass-blowers: Richard, William, Thomas and Isaac Williams, natives of Chester, were the glassmakers. Two of the brothers, Thomas and Richard, died in 1827, and the business appears to have been wound up at that time as no further mention occurs. *Contemporary commentaries:* The earliest mention of window-glass is in two advertisements of 1770 in the Belfast Newsletter and Limerick Chronicle (the Williams' had been producing glass in Dublin since the 1750s). In 1777 plate glass for looking glasses, coaches and windows was advertised, of their own manufacture. In 1821 a petitioner to the Guild of St. Loy was found to have been bound to Richard Williams as a bottle-maker and therefore was of questionable eligibility for the glaziers' guild. No window-glass was manufactured here in the 19th century, as inferred from testimony given by Richard Williams to a parliamentary inquiry in 1822.

Sources: DCA, Guild of St. Loy Minutes, f.105

Westropp, *Irish Glass*, pp.57-61

Fourth Report of Commissioners of Inquiry into Revenue Arising in Ireland, 1822, pp.282-88

North Strand / Ballybough Bridge, Co. Dublin

Dates operative: premiums granted in the 1770s and 1780s

Glass type: plate glass, flint glass

Names of owners/important connections/glass-blowers: The information concerning this glasshouse is confusing. It may have been an enterprise of Henry Lunn (see above), who had property at nos. 4 and 5 North Strand, on which there were glasshouses shown on a map of 1787. Alternatively it may have been connected with T and J. Chebsey, glass manufacturers, who had a manufactory at Ballybough Bridge, making flint and Venice glass (and may have been the producer of plate glass as mentioned below). The third possible owner was Williams and Co., whose works were sited in Marlborough Green, some distance from the North Strand (see below), but who received premiums from the Dublin Society for plate glass and who had some connection with the North Strand (see 1788 notice below). *Contemporary commentaries:* An advertisement in the *Dublin Journal*, 23 September 1783 noted that "an artist from England intends settling in Dublin for making plate looking-glass after the French method (that is by rolling while hot with a brass cylinder, by which sheets of any size can be made) as all the materials are on the spot, and it will effect a great national saving". The *Dublin Chronicle*, October 18 1787, mentions the Chebsey's works at Ballybough and states that "plate glass for coaches etc, is also made and polished near the North Strand. Add to this another glasshouse is erecting on a very extensive scale near the North Wall". The *Dublin Chronicle*, May 10-13, 1788, writes that "William Williams, proprietor of the new Baths near the point of the North Wall [near the North Strand] first brought to perfection in Dublin the manufacture of flint and plate glass".

Sources: NLI Ms 24936, Westropp Papers

Meenan and Clarke, *The Royal Dublin Society*, p.240

Westropp, *Irish Glass*, p.58-9, 208

Smylie and Co., The Long Bridge, Belfast

*Dates operative: c.*1784 until *c.*1797

Glass type: crown glass and bottles

Names of owners/important connections/glass-blowers: John Smylie and Co. managed this works which was set up specifically to manufacture window glass under a silent partner, Cunningham Greg (see Benn, below, for details on the numerous partners and changes of investors involved). This glasshouse was apparently inactive after 1797 until taken over by Benjamin Edwards, an adjacent glassmaker, in 1824, but this later enterprise did not last long, and probably produced flint-glass. *Contemporary commentaries:* The *Belfast Newsletter* of Aug

19 1785 noted that the glasshouse was newly finished, and the same paper of Jan 14, and Feb 26 1788 noted crown was now ready for sale. In the March 13 1778 issue, prices of 44s. and 42s. per side for crown glass of "good" and "second" sort were listed. On May 13 of the same year, the prices were listed per foot (for sizes ranging from 6 inches by 4 up to 14 inches by 10). In March 1789 they advertised their prices as at least 14 percent cheaper than Bristol and the quality as superior, and when cut into squares are at least 50 percent cheaper. The annual value of Smylie's window-glass between 1788 and 1794 varied from £1377 to £9512 (Westropp). Smylie consistently received premiums from the Dublin Society for "crome" [sic] glass "equal to good Bristol Crown".

Sources: *Belfast Newsletter* advertisements, collection of Peter Francis

Benn, *History of Belfast*, p.357

Meenan and Clarke, *The Royal Dublin Society*, p.240

Westropp, *Irish Glass*, pp.103-9

Ringsend Crown Glass Factory, Co. Dublin

Dates operative: possibly started as early as 1787, mentioned *c.*1798

Glass type: crown glass

Names of owners/important connections/glass-blowers: John Raper, glazier and glass-seller, Dublin (see Appendix Four) sold the produce of this glasshouse. *Contemporary commentaries:* the *Dublin Journal* noted, in August 1787, that demand from the French market had encouraged an English company to erect a glasshouse at the foot of Ringsend Bridge. No more is heard of it until the Dublin Evening Post, Mar 1 1798, stated that "window glass of a large size and good colour is now ready for sale" from an "infant manufactory" at this site, the buyers to apply to John Raper's window-glass warehouse. No further information is forthcoming.

Sources: Westropp, *Irish Glass*, pp.62-3

Mulvany / Pring / Davis, Ringsend, Co. Dublin

*Dates operative: c.*1820 until the 1850s

Glass type: crown, bottle and flint glass

Names of owners/important connections/glass-blowers: Charles Mulvany, flint glassmaker of Dublin, apparently erected this works about 1820, which was advertised to let in 1828. This may be the works on Fitzwilliam Quay let to the Rev. John Prior (mentioned as proprietor in 1838), and subsequently taken by Elijah Pring in 1843. Samuel Davis, window-glass maker, had

Pring's glasshouse for several years from about 1848 until at least 1853. Westropp states that Pring's glasshouse became the Ringsend Bottle Company, which exhibited in the Cork Exhibition of 1883. *Contemporary commentaries:* Davis is listed as a glass manufacturer in 1853 – location not given – selling glass shades, tables of crown glass and bent glass. No window-glass was made here (or elsewhere) in 1822, as related in a statement to a parliamentary enquiry in that year.

Sources: Boydell Papers

Fourth Report of Commissioners of Inquiry into Revenue Arising in Ireland, 1822, p.283

Sproule (Ed.), *The Irish Industrial Exhibition 1853*, 'Glass', by W. K. Sullivan, pp.395-400

Westropp, *Irish Glass*, p.55 and 66-7

APPENDIX THREE

THE IRISH GLAZING FRATERNITY IN THE 17th AND 18th CENTURIES

From the middle ages people skilled in fashioning glass into window frames were variously called glasswright, vitrarius, glass worker and glazier (or glassier). All of these words originate from Latin (glazed windows were widely known in the Roman empire). The term glazier also referred to the painter on glass, an occupation carried out by the trade until the mid-seventeenth century. The following study attempts to throw some light on this little regarded branch of the Irish construction trade, as were the social history of craftsmen more widely known, the fruits of their handiwork might not be destroyed without protest. The glazier William Cooper commented in the 1830s, "we cannot but think that the skill and ingenuity of the mechanic, in ordinary things, are not sufficiently prized, and this merely because, from not being sufficiently known, they are accounted ordinary things."[1] Richardson, writing in *An Introduction to Georgian Architecture* notes that craftsmen such as glaziers were not less inferior in skill to cabinet-makers, stucco-workers or carvers, until the machine usurped the artificer.[2]

Family glazing firms and working alliances

The little remaining evidence on the glazing fraternity tentatively points to both loose networks and long alliances.[3] Firms may have been composed of several family members, or generations of families. The extent of sizeable firms, or the existence of organised groups of glaziers who shared work cannot usually be proven because only the master glazier's name is given in bills and receipts. Some connections are known only through a line in the franchise rolls, or because witnesses and executors of glazier's wills sometimes included other known glaziers. Occasionally a bequest went to an unrelated glazier, which points towards friendships built upon trading alliances or apprenticeships.

John Mossop (who was enfranchised in 1699, and died in 1720) seems to have collaborated with Nathaniel Rothery (also enfranchised in 1699) in tendering for the Royal Hospital contract in 1711, and possibly for other jobs. He is not otherwise recorded in connection with any other glazier. Rothery in turn (who was a member of the well-known

connections may have assisted him, his brother-in-law being Mr (Michael) Wills, the architect. His foreman of six years, William Lawson, petitioned Trinity College for the glazing contract after Rowlette's death, stating that a report on his ability was done by Mr Wills, who was Mrs Rowlette's brother. Lawson was looking to set himself up in the glazing business, but whether or not he succeeded immediately is a matter for speculation, as his name does not recur until 1775 in the Dublin Directory.[12]

Josias Evans, glazier, was admitted to the Dublin franchise in 1677. One of the witnesses to Evans' will of 1729 was Richard Eaton. Whether or not it was this Eaton, or perhaps a son, who was later admitted as glazier is not known, but in 1735 both Richard and George Eaton were enfranchised. Richard Eaton was prolific, glazing at most of the civic buildings, a body of work that must have required assistance.[13] George's son Thomas was admitted as a glazier in 1747.

Richard Eaton had an apprentice, Henry Sibthorpe, who was registered in the franchise in 1759. Henry was the first documented glazier of the Sibthorpe family of glaziers and interior decorators who became well known in the business in the nineteenth century and for much of the twentieth. Luke Sibthorpe was in receipt of work from the city fathers at the start of the nineteenth century, at the Mansion house and Marshalsea. A large number of his apprentice glaziers are documented: in the period 1812 to 1835 five were admitted to the franchise, along with two sons, Charles and Thomas.[14]

A tentative connection may be made between the well-known Jackson family of glass sellers of Essex Bridge and some other Jacksons in the glass business. Thomas Jackson, glass seller, who had a will proved in 1749, is the first mentioned. His executor was James Bibby, another Dublin glass-grinder and seller. (Thomas Bibby, another member of this family, was an acquaintance (at least) of the Booker and Meyler glass-grinding families also operating in the mid-eighteenth century.[15]) Anne and James Jackson advertised as glass-grinders of Essex Bridge in the *Dublin Directory* of 1761, with James and Richard listed in the 1775 edition. Two other Jacksons, Michael and William (noted as the son of William) were admitted into the franchise as glaziers in 1749 and 1747 respectively.

The glazier William Walsh was admitted to the franchise in 1774, on completion of service. Walsh successfully tendered for the Royal Hospital contract in 1778 (at £22.15.0. per annum), glazed the new Gaol in the 1780s, and Trinity College on contract in the 1790s. He died in 1798. His wife continued the Trinity account on her own before going into business with Josiah Jackson, glazier (there is no evidence to link this glazier with the Essex Bridge concern but he may have been a descendant of the two glaziers listed above). Jackson was the contract glazier for some years up to the 1820s in the Royal Hospital. [16]

William Warren was enfranchised in 1759 by birth, the son of John Warren (possibly the smith of this name admitted in 1717). He died in 1797. A glazier called Nathaniel Warren may have been related. John Wilkins was admitted in 1739, by service, and lived in St. Bride's parish. His only documented work is no. 45 Kildare Street (in the 1740s).[17] It appears that Warren and Wilkins were in partnership, as in 1768 Henry Davis was admitted to the franchise by service to both men.

Cornelius Callaghan, a Dublin glazier, (admitted to the franchise in 1772) had many official jobs, including a large contract for glazing the new Kilkenny College in 1784. Callaghan died in 1799.[18] His son Cornelius was admitted in 1814, and became an active member of the Guild. Apparently he worked in partnership with Josias Phillips as their apprentice George Houghton was enfranchised in 1819. Phillips' son, also Josias, was admitted in 1825. Messrs Callaghan were paid £43.17.5 from the city for painting and glazing in 1811.[19] A John Callaghan, possibly a relative (who is not mentioned in the franchise rolls), also received moneys for glazing from the city authorities.

The Raper family (either siblings or an extended family) were active glaziers in the late eighteenth century. William was admitted in 1770 by 'special grace' and Richard on similar grounds in 1772. John Raper was probably another sibling, who also held official contracts, recorded in *CARD* and the *Commons' Journals*, though he does not appear in the franchise rolls. John, who died in 1808, was connected with a Ringsend glasshouse. His will survives.[20] In 1816 Dominic Brocas, glazier, was enfranchised by service to the late John Raper.[21]

As with the building trade in general, by the early nineteenth century glazing firms were broadening the scope of their work, and becoming larger, with premises separate from their

living quarters. Contractors at the Royal Hospital (and other firms who tendered unsuccessfully for work) had employees carrying out glazing, papering, painting and other skilled trades. The Sibthorpe business is possibly the best known and longest lasting of such firms in Dublin.

Personal wealth and poverty

In 1686 William Petty calculated the typical annual wage earned by an artisan in Dublin as £26, based on a wage of 20d daily. The tradesman, according to Petty, "may live very well upon £12 and £14 saved."[22] The cost of living – including the price of glass – rose at many periods, but it is assumed that wages kept pace. Information on wealth is tantalising due to its scarcity; while the documented glaziers appear to have been well paid we do not know the exact numbers of tradesmen in competition at any one time. Dublin expanded enormously from the late seventeenth century onwards, so work must have been fairly constant in the capital, although the situation elsewhere may have differed. (The failure of the Belfast merchant Macartney to sell window glass brought from Dublin in 1679 for nine months has been noted in Chapter One; at the end of this time he had sold just two cribs.[23]) Dean Swift intimates that glaziers were also involved in the combinations of artisans then commonly erecting terraces of houses in Dublin, which means that money must have been forthcoming from those in that bracket.[24] William Rose advertised his 'Lottery of Looking Glasses' in 1711 in which out of 756 tickets 189 would get prizes (of mirrors, one presumes). Although such a scheme may have represented a way of getting a reluctant public to buy mirrors, Rose must have had financial security in order to have so many mirrors in stock.[25] Another looking-glass maker, Caleb Emerson, was described on the eve of his departure to America in 1731 as "eminent and rich".[26]

Many glaziers left wills; those that survive indicate that ownership of property rather than money was predominant. Leasehold and freehold houses and premises were willed to relatives and friends, and occasionally to other glaziers. Even without the evidence of a will, the recorded work of some glaziers indicates a level of prosperity. Richard Wilson, admitted to the franchise in 1666, glazed on account at Dublin castle, the Phoenix, the Tholsel and the Blue Coat School. He had a quarterly salary of £3 from the administration in the 1660s.[27]

In 1673 Andrew Rock glazed the chapel of the Blue Coat School and donated £5 towards the building. This is the earliest record of his work. Given the rates quoted by Petty,

and such charitable donations, the annual contracts offered to glaziers in the Royal Hospital seem to uphold the idea of relative wealth: Rock, the first contract glazier, was paid £24 per annum from 1692.[28] This glazier had other documented jobs, so he was not relying on this contract alone. Unfortunately record survives of his having dependants or apprentices, nor is there a will.

George Delane glazed at Trinity College from at least 1699 to his death *c.*1720. Glazing was paid quarterly, from submitted bills. His wife was also a glazier, but it is not known if they supported apprentices. Delane's will, which listed property in several counties, is no longer extant, but survives in precis.[29] The will of Thomas Sandys the Elder, a Dublin glazier, on the other hand, does survive. He left many properties in Dublin, both leasehold and freehold on his death in 1724, although there is no record of glazing work. Sandys dwelt in Garden Lane, near Meath Street, and owned the house beside this too. He had two houses in Catherine Street, two houses in Vicar Street, a holding and houses in Patrick's Close, the leasehold of seven tenements, and a holding known by the Sign of the Book, Patrick's Close.[30]

Ralph Leland's will of 1743 also survives, and makes interesting reading: as a glass-grinder by trade in the franchise roll, he became a shopkeeper, selling mirrors and glass, one presumes. He left leasehold and freehold properties on many Dublin streets and £100 to his brother.[31] William Norris, a Quaker, left three houses in his will of 1725, and glazing tools, diamonds and glass to his son Benjamin. No jobs or contracts by him have been documented.[32]

James Hull, glazier, had the contract for the Royal Hospital from 1712 to about 1740, at £36 per annum, which sum did not include special jobs over and above ordinary maintenance (of the leaded casement windows). Unfortunately for a man of such high income, there is no will, nor other record, not even a franchise enrolment.[33] John Rowlette also had a very successful career as a glazier. He had the contract for glazing at Trinity College from 1728, and other contracts as detailed above, until his death.[34] Unfortunately the extent of his wealth cannot be estimated, as no will was left.

Robert Moore, who was enfranchised in 1746 and died in 1788, received the very large quarterly amount of £49.16.5 from work at the Barracks of Dublin and there are other

documented jobs by him at the Barracks, Dublin Castle, and Trinity College. The will that he wrote does not survive, but it is documented that he had property around Dame Street.[35]

William Walsh, admitted in 1774, had a glazing contract with the Royal Hospital, at £22.15.0. per annum, for which he tendered in 1778, until his death in 1798. He also glazed the new Gaol near Cornmarket and at Trinity in the 1790s, pointing to a busy – and prosperous – schedule. The will he wrote has been lost.[36] Another glazier who left a will was Cornelius Callaghan who died in 1799. At one point he was paid £150 for glazing on contract at Dublin Barracks and he also did work for the City of Dublin and the College of Kilkenny.[37] John Raper left a substantial amount of property around Dublin in his will, after what appears to have been a prosperous career as a window-glass and china / glass seller.[38]

The social standing that money brought is most clearly seen in the Booker family's rise from glass-grinders to merchants with connections by marriage to minor nobility. Booker became Lord Mayor of Dublin.[39] Another looking-glass maker, carver and guilder, William Bibby, subscribed to John Aheron's *A General Treatise on Architecture* (1754). The education afforded the children of glaziers could help not only their employment prospects, but also their social standing. Lord Cloncurry wrote that one of his friends in Trinity College Historical Society, Edward Lawson, was the son of a glazier, and afterwards member of the Irish bar.[40]

The two main harbingers of poverty were taxation (on glass and windows) and recession. Taxes and duties, coupled with restrictions or prohibitions on export and import – at all times some impediment was in force – raised glass prices and made life that much more difficult for glaziers and glassmakers.

Irish glass exports were prohibited in a number of laws – of 1698 and 1746 – designed to quash any Irish competition to the English trade. At the same time, the import of all but English glass was either prohibited or penally taxed. The imposition of tax on glassmaking in England in 1746 immediately affected the trade here.[41] *Faulkner's Dublin Journal* of 22-5 March 1746 was incensed by the whole affair, remarking of the price of window-glass, "there is some comfort in reflecting that summer is at hand, and that some ingenious invention may have been found before winter for supplying its place of at some moderate expense".[42]

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Parliament under the nationalist prime minister Henry Grattan won a number of concessions for Irish manufacture in the 1780s, among them the freedom to export glass to Britain and the Dominions. This trade was taken advantage of: the *Dublin Journal* noted the increase in bottle and window glass manufacture, with 12,000 foot of window glass being exported from Dublin in April 1788.[43] Excise varied through the years, with levels depending on the country of origin, and political affiliations: in the 1780s 12% was levied on British and French glass, with 60% on glass of other countries. This came on top of glassmaking levies in Britain (which encouraged English glassmakers to settle here).[44]

The window tax was finally levied in Ireland in 1799. It was universally condemned. In tandem with the excise on glass, the burden to householders and artisans was excessive, and the (English) parliament was petitioned by trades' associations and official authorities in Dublin and Cork. Dublin Corporation passed a motion to instruct their parliamentary representatives "to represent that the window tax is a very heavy burthen on the inhabitants of this country and to use their best endeavours to have the said tax taken off or reduced in a reasonable degree", as early as 1803.[45] The Guild of St. Loy formulated a petition in 1816, decrying "particularly that obnoxious, oppressive and extravagant (levy) called the Windowlight Tax." The Cork Trades Association petitioned both Houses of Parliament in 1835 complaining about the duty on glass which had increased the price from £1.10.0 per crate to £5.10.0. People were boarding up panes, or leaving broken and blank panes. In one street with 194 windows, the petitioners reported, just over a quarter of the panes were still whole.[46]

The poor in the glass and glazing fraternity only come to light very occasionally; as noted above, George Meares, glazier and printseller of Dublin, petitioned the House of Commons as a bankrupt in 1766. John Kane, late of the City of Dublin, glass-grinder, (who is unrecorded elsewhere) also petitioned the House for relief against his debtors in 1772.[47] In neither case is a conclusion recorded to the petition. The *London Gazette* reported that Isaac Hayes Dunbar, formerly of St. Giles in the Fields and latterly glass-manufacturer of Dublin, was declared bankrupt in 1772.[48]

Guild membership, civic enfranchisement

The stipulations for entry to the franchise and guild – the Guild of St. Loy – were divided into four main categories: service to a freeman, birth, *grace especial* and Act of Parliament.[49] In all cases a fine was paid. Entry by service was by far the most usual for the glazing fraternity. In order to qualify for entry by birth the petitioner's father or grandfather had to have been a free Brother before he was born. In the franchise rolls there are instances of women being admitted (no trade given) by birth, although the female glaziers documented were not admitted in their own right.[50] A petitioner married to a freewoman was eligible to petition for entry. As in all the corporations, no Roman Catholics were allowed apart from the period of James II, when the guilds protested at having to admit them. A petitioner of 1830, James Martin, having served his apprenticeship to Henry Sibthorpe, was refused entry as a freeman as he had converted to Catholicism.[51]

Some of the Dublin glaziers encountered in various building accounts are not mentioned in the franchise rolls (even under other trades). Though otherwise distinguished by the receipt of sizeable contracts by official bodies – who it might be expected would employ artisans affiliated to the recognised associations – some prominent glaziers are missing from the franchise rolls.[52] Glassmakers seem to have gradually excluded themselves from membership. Either they were not made welcome or did not wish to be associated with the natives; perhaps the latter is more likely as most glassmakers were immigrant English or French workmen, in businesses run by English employers.[53] The Guild minutes of 1821 record the dissatisfaction of the committee over a petition for entry from a glazier's apprentice, on discovering that he had in fact been apprenticed to the trade of bottle making at the Williams's glasshouse. It appears that the petitioner was refused entry. One reference, however, appears to indicate that Edward Barry, glass manufacturer, was a member of the Guild of St. Loy in 1797.[54]

Division of labour: glazing, joinery and smiths' work

The extent to which tradesmen were active in guilds which represented other trades apart from those they practiced (or were enfranchised in) is unknown.[55] It is not unusual when inspecting the franchise rolls for documented glaziers to find that they were apprenticed to smiths or joiners, or that they were admitted as freemen of other crafts. This poses the question

as to whether there were two strands in the glazing trade up to the early eighteenth century, one concentrating on lead-glazing and the other on timber windows. Glaziers with family or apprentice connections or skills in joinery perhaps adapted more easily to the new jointed timber sash. Those who are documented as having carried out several church jobs in the late seventeenth and early eighteenth century, such as John Mossop, perhaps continued to work with iron and lead, as churches were among the last to change to the new type.

It has been found that in father/son teams, where one or other professed a different trade, both in fact practiced glazing. Some of the prominent glaziers' names connected with other crafts include Mossop, enfranchised 1703 as a smith. Thomas Rutter, enfranchised 1651, was a glazier whose son was Joseph, enfranchised as a smith. Richard Norton, (1680), glazier, was an apprentice of Dennis Norton, smith. Gowen Lowcay, glazier (1680), had a son or grandson Henry who was admitted as a smith in 1730. Robert Dowdall, glazier (1666), was the son of John Dowdall, joiner. Samuel Bedcock, glazier (1686), had been an apprentice of Peter Ward, a carpenter, and Joseph Meyler, glazier was admitted to the franchise in 1695 as son of Nicholas Meyler, carpenter. The Godfreys, Anthony (1708) and John (1730) were both enfranchised as joiners, but practiced as glaziers. Robert Moore, glazier, was admitted in 1746 on completion of service to William Barlow – but the only William Barlow recorded in the franchise rolls was a bricklayer. William Chaytor, a Quaker glazier, was admitted in 1756 on completion of service to his father; the only likely (franchise roll) candidate was a chandler. The inclusion of glaziers as smiths in the rolls may occasionally have occurred due to mistakes in information from the guild, as the Guild of St. Loy was foremost the guild of smiths. A cross-reference possible from the surviving Guild Minutes of 1811 - 1835 and the franchise rolls shows that after 1800 many glaziers were entered in the rolls as smiths.[56]

Differentiating between glass-grinders, guilders and sellers in documentary records is not easy. A tradesman might have been enfranchised as grinder or glazier, but diversified, specialising in a more decorative trade such as looking-glass maker, which involved a retail element as well as importing, cutting, grinding, and silvering the plate glass (and contracting out the manufacture of the mirror frames). This diversification from glazing to glass-grinding is seen in several families. The Jacksons, the Bibbys and the Bookers of Essex Bridge (and the

Lelands and the Rose family) became better known as mirror sellers. The catalogue of goods listed in a surviving Jackson bill-head of *c.*1747 omits mention of flat glass and instead describes the luxury articles for sale such as opera glasses and pocket microscopes.[57] The extended Sibthorpe family found lasting fame as interior decorators from a start in glazing.

A combination of timber-carving and glass-selling, probably a similar type of operation, was practiced by both James and John Robinson in the 1770s.[58] The departure into retail trade was also made by the Silcock family. Gabriel was admitted in 1718 as a smith, and his son Thomas as a glazier in 1738. By the 1750s, Thomas had a shop in Skinner's Row opposite the Tholsel, selling prints, pictures and fully glazed sashes. He described himself as a print-seller in his will (which unfortunately does not survive).[59] Cornelius Callaghan, who began as a glazier (or was so listed in the franchise rolls) also diversified. The 1798 *Dublin Directory* lists him as "glazier, painter, map and print-seller" of 35 Mary Street.[60] George Meares of Temple Bar was described as a glazier and print-seller, in his petition to the House of Commons in 1766.[61] Christopher Humphreys, of St. Andrews Street, had a shop retailing in window glass and glass for hothouses and gardens, at the start of the nineteenth century. He also undertook house painting.[62]

The alliance of glazing with plumbing and painting also occurs. William Durant of Youghal was admitted to the franchise in 1619 as a merchant, though he practiced as a glazier, and one of the conditions of acceptance into the franchise was that he only work in painting and glazing. John Duckett of Kenmare was a mid-eighteenth-century plumber and glazier.[63] In the late eighteenth and early nineteenth centuries, the trades of glazier and painter were increasingly merged. Strictly speaking, these belonged to different guilds, but instances of the glazier undertaking both as a condition of contract have been found. As related above, Messrs Callaghan were paid by the City fathers in the early nineteenth century for painting and glazing.[64] Rivalry between guilds was not unknown, but the attitude of the Corporation of Smiths (St Loy) towards glaziers formally recognised as joiners, plumbers or painters is unknown. Neither is the attitude of other guilds towards this practice recorded. It appears that the distinction between the trades was blurred, probably linked with the declining power of the guild system and the growth of large contract work that would formerly have been tendered to

several tradesmen (but which, with the advance of industrial organisation, instead went to construction or decoration firms who could fill all related aspects of the job).

Contracts and terms of employment

Civic contracts were occasionally imposed as a condition of entry to the franchise, as in the case of Richard Wood, admitted in 1607. He was accepted upon condition that he would "repair and maintain the windows of the middle room of the new Hall [of the Tholsel] and the windows of the treasury house during his life, the same to be done with semoned glass and also to be bound in recognizance to sell semoned glass to all freemen of this city for eight pence the foot".[65] The extent to which the civic authorities would go to extract unpaid work is illustrated by several examples. William Durant was admitted to Youghal on condition that he must quickly and at his own cost glaze all windows of the Tholsel (the town finding the iron bars) and keep them glazed during his natural life, and two masons were enfranchised in Dublin in 1618 under obligation to perform a condition mentioned in the cognisance for building the Tholsel window.[66]

In general, every trade involved in construction operated independently, answerable to the clerk of works, contriver, architect or owner. Some late seventeenth- and early eighteenth-century Articles of Agreement survive; at St Werburghs in 1662 the mason (Thomas Brown) was reponsible for all materials, and structural work which was to "be done at the only charges cost and expence of the said Thomas Brown".[67] At Burton Hall, Co. Cork in 1670, the architect was obliged "at his own charge" to provide all the necessaries for the windows, and "glaze all the windows, with *dimont* quarry glass, well cemented." The 1673 articles for Blessington House, Co. Wicklow compelled the contriver Thomas Lucas "at his own cost and charges, to find and provide all masons...glaziers...and other artificers [with goods]."[68] In this contract the dimensions, materials and type of glazing were specified. At Castle Durrow in the early eighteenth century, the contriver Benjamin Crawley's proposal specified that he was to find all materials including glass. He also acted as the measurer.[69] The Articles of Agreement for St. Partrick's Hospital, Dublin, 1749, detail the dimension and materials of every item relevant to the project, down to the types of glass to be used by the glazier(s) and at the Gilson School Oldcastle, Co. Meath, the two builders who signed the 1824 Articles of Agreement were

charged with responsibility for all of the work, including the glazing and window-framing specifications.[70]

In Trinity College there is no mention of an annual or quarterly salary for the glazing contract, though it seems that one glazier or firm was employed at a time, apart from when a major building contract was being undertaken. The only information relating to tendering for contracts at Trinity comes from the unsuccessful petition of William Lawson, *c.*1760 (related above). The Royal Hospital started contracting in 1692 for a glazier to keep the windows in repair. The annual sum varied, usually being fixed for the duration of each glazier. These contracts were renewed for periods of longer than a year, unless, as in the early nineteenth century, dissatisfaction was expressed about the competence of the glazier, and an earlier one was re-contracted.[71] Bills were paid half-yearly or quarterly. The tender was ordered to be advertised in 1778, and public notice was again ordered in the 1820s.[72] As glass prices rose, so did the annual stipend, however the contract price varied, not always increasing.

The upkeep of country houses necessitated the employment of tradesmen, either paid per day or retained on a contract. John Maning glazed at the Restoration mansion of Charleville Co. Cork (and other properties belonging to his employer), from the 1660s to the 1680s at least, on contract, paid half-yearly.[73] It is to be supposed that small jobs were paid by daily rate, as seen in the accounts of the Earl of Fingall from the 1780s. William Torrington, glazier and painter, was paid 2s 2d by the day. John Duckett, plumber/glazier of the Kenmare estate, had glazing paid by piece.[74] There must have been many independent glaziers around the country such as Duncan Bean, who in 1737 advertised that he had lately returned to Trim, Co. Meath, to continue "to make and sell all sorts of glasses for windows", with a guarantee of maintaining his work against wind and weather for twenty years.[75]

Building by combinations of trades such as masons, carpenters and glaziers was castigated by Dean Swift early in the eighteenth century. He complained that they were only building as there was nothing else to do in those times of economic depression, and half of them were bankrupted by the expense.[76] This type of construction by its vernacular nature has left few records, and neither the extent of these shifting collaborations nor the exact nature of the glaziers' input is known. An anonymous contributor to the *Freemans Journal* in 1768 castigated

building by contract, stating that the general contractor had a variety of opportunities for profit by cutting corners as he had control of the materials and the workmen.[77]

Dissatisfaction with glaziers' work – specifically the moneys paid or demanded for contract work – occasionally surfaces. The *Commons Journals* notes the censuring of John Rowlette in 1751 for charges relating to Parliament House work, as he had looked for nine pence per foot for Bristol glass whereas it was commonly had for seven pence.[78] The Governors of the Royal Hospital sometimes felt short-changed by the glazing work, and regularly when the contracts came up for renewal they reduced the amount on offer. This is most dramatically seen in 1744 when James Hull's £36 per year contract ended and his successor Charles Farran was offered just £16.[79] When the tender went out in 1778, they imposed more work on the successful applicant (William Walsh) than he had offered for the sum, which he must have been accepted, as he continued to work there.[80] In the 1820s and 30s the Governors of the Royal Hospital further tightened the reins on expenditure. In 1827 they ordered that the glazier was to get orders in writing from the Overseer of the Works before doing any jobs extraneous to the contract.[81] During the early nineteenth century, the contract prices became ever more competitive, which must have rendered the position less attractive to the glazing firms of Dublin. In 1838 the system of paying the glazier an annual amount to clean the windows (as part of the contract) was discontinued altogether, to save money.[82]

It is not certain from the existing records if it was more usual for the employer or glazier to supply materials, as both work with and without materials "found" has been noted. Neve's *City and Country Purchaser* notes that the master finds the glass and the glazier the lead solder and workmanship, or only workmanship, though how accurately this reflects Irish practices is not known.[83] In lead glazing, as far as can be ascertained, the glazier was responsible for lead, solder and glass, and the pointing of it (the grouting or puttying). At only one time – during the building of the Library – in the comprehensive early eighteenth century Trinity accounts is glass invoiced separately and charged to the college by the glazier. At the Royal Hospital the glass is rarely mentioned until the early nineteenth century, when glaziers tendering for the contract were ordered to specify the type and price of glass they would offer.[84]

This confirms that the Hospital took on the charge of the glass, paying the contractor for that which he used in ordinary repairs.

In glazing, the niceties of pricing hinged on where one took the calculation on the pane of glass, either from edge to edge (which includes all glazing bars) or putty to putty ("in the clear" being the term used). Elliptical or semi-circular headed windows always were measured from the widest and highest point, the justification being that much of the glass cut was waste due to the curved shape (although crown glass by its shape was eminently suitable for this use). Another method of calculation of the cost of glaziers' work was to take the primed and glazed sash at a given cost per square foot, which naturally included the cost of timber and workmanship and hid the value of the glaziers work. The purchasing of fully glazed sashes grew more popular from the mid-eighteenth century, changing the nature of the glazier's work and glazing contracts.[85]

Glazing methods and tools[86]

In preparation for cutting the glass, the glazier made a draught of all the windows on paper, setting down the dimensions of each light – height, breadth, and number of lights to each window. As measurements were taken down to tenths of an inch, a rule was used which delineated these fractions. Then the measurements were gauged on each table of glass, to fit as many as possible out of the crown disc. Cutting was carried out with a heated grozing iron, which was superseded by a natural unpolished diamond spark in the eighteenth century. A grozing pliers ground the cut edges. For timber glazing, a hacking-out tool, commonly a broken knife, was used to remove old putty out of the rebate. A stopping knife, a short-bladed knife ground to an apex, was used for bedding the fresh putty. Lead glazing was carried on in much the same way as today, using H-profiled extruded or cast lead calmes, into which pieces were fitted, the lead joints soldered, and the whole grouted with a compound of linseed oil and whiting. Cutting rounded edges was achieved by a special compass, which received the end of the diamond cutter. There are several sources detailing the correct methods of inserting and securing the glass. The following one describes the manner preferred by the (Irish) Barrack Board: windows were to be glazed with "Dublin glass, to be well bedded in putty, when first put in, then well pegged and afterwards to be well puttied on both sides, and the panes to be cut the

full size of the square, and not to have any wants in the corners." The New Practical Builder advised glaziers to cut glass full into the rebates, "for when too small or too large, it is liable to be broken by the least pressure ... the putty should never project beyond the line of wood in the inside." Large squares should be further secured with small sprigs in the rebates.[87] The Articles of Agreement for the Gilson School in Oldcastle, Co. Meath specified that the panes should be "well puttied and back puttied and left whole and clean at finishing the business."[88]

APPENDIX FOUR

THE ADOPTION OF THE SASH-WINDOW BY IRISH JOINERS AND CARPENTERS

There is very little written information on the joiners and carpenters who made sash-windows in Ireland, although the names of some are known. It is probable that in general joiners and carpenters undertook work of all types and that few, if any, specialised in windows, although shops which sold ready glazed sashes (among other things) may have had "house" joiners who did little else.

The responsibility for the making of windows was included in a dispute on the roles of the carpenter and the joiner in London in the early seventeenth century.[1] The making of the sash-window seems, however, to have been allocated to the joiner from its inception, and it provided one of the most important roles for this craft for the next two centuries.

Joinery was known in Ireland far earlier than the introduction of the sash-window in the Restoration era. Over a century previously in 1555 the carpenters guild in Dublin (established in 1508) included 6 joiners among 34 carpenters and 19 journeymen carpenters.[2] The earliest freeman joiner, Henry Herrysone, was admitted to the Dublin franchise in 1575, "during his natural life and dwelling in the same as a citizen" at the request of the Mayor Patrick Goghe. Most of the other sixteenth-century entries were admitted by service, suggesting something of a tradition of joinery even at this very early date. Indeed the accounts for the building of Tailors Hall in 1583/4 include "joiner for the windows", which may have consisted of accommodating leaded lights into a timber framed structure (unless the making of timber-framed lights preceded that in England).[3]

The advent of the sash-window saw master joiners taken to the English provinces, it is thought to instruct the local joiners in the art of making sashes in the 1670s and 80s (however this practice gradually died off). Joiners were also sent to London to make patterns of the well-known windows such as those installed in the 1690s at Hampton Court.[4] The following correspondence may reflect an Anglo-Irish tendency to do the same during the last decades of the seventeenth century and the start of the eighteenth. John Perceval of Burton Hall, Co. Cork

wrote to Robert Southwell in London in February 1681/2 informing him that "Christopher ye Joyner offers to go over with me into Ireland with four or five men", presumably to work in Cork. In 1703 William Taylor informed Sir John Perceval (son of the earlier man) "there is an English joiner who with his wife and family came out of England three years since, he is excellent for making sash windows, wainscotting ... he has made good pieces ... and extraordinary cheap".[5]

However, the attraction of the immigrant joiner may have been overstated by this time, as seven years later William Taylor wrote again to John Perceval on this subject. "You may be advised by some friends, as your father was, to his great cost, to bring carpenters and joiners out of England believing you may not have any good in this kingdom, assure your self, that you will find as good of both kind as you need desire, and I am sure cheaper, and more to your satisfaction". Later that year he wrote again "you will find as good carpenters and joiners in the country as in Dublin that will undertake to do all your work".[6]

The notion that good work was only available in the capital (or by hiring a tradesman from it) seems to have persisted quite late; joiners enfranchised in Dublin are mentioned in accounts of provincial house building, and, as seen in the 1722 letter from Lord Ferrard at Beaulieu, his new staircase was made in Dublin.[7]

Division of labour

The trade guilds in general seemed to have included members of various crafts (in the seventeenth century at least) and gentlemen further up the social scale, especially those seeking to get involved in public office. Due to the destruction of records of the joiners' guild it is not known if there was an open attitude towards the division of labour in fields such as the making of windows. Certainly in 1656 the guild of carpenters, millers, masons and heliers included a wide variety of trades, such as cooping, brickmaking, plumbing and distilling. This guild lost some power during the latter years of the seventeenth century, as members set up guilds for their own specialisms. The coopers left in 1666, the brickmakers and plasterers started their own guild in 1670, and the joiners departed in 1700 under John Sisson (see p.270) to form their own organisation.[8]

Joiners may have been associated with the making of the sash-window from its introduction in England, but in Ireland many accounts show that carpenters were commonly paid for this work, as well for more structural jobs. It is thought that the more sophisticated and intricate windows became, the more they were the province of joiner rather than carpenter. The dividing line in England (as researched by Louw) between the work of both seems to have hinged on the use of glue and the fitting up of wainscotting, which indicate work in the province of the joiner.[9] Several Irish sources of the eighteenth century show that there were different divisions; not even the panelled shutter remained solely in the domain of the joiner. On the whole the joiners' attempts to attain superiority over the carpenters by taking charge of more specialist or decorative timber work gradually failed, and joinery work was subsumed into carpentry by the late eighteenth century.[10]

One of the earliest mentions of sash-windows at the Royal Hospital, Kilmainham (in 1698), is in an estimate of joiner and carpenter's repair work to sashes in the chapel. At the same institution in 1763, 73 sashes and frames in the gallery were made by the hospital carpenter, George Stewart. Gabriel Price, the contract carpenter at Trinity College was responsible for the earliest noted sashes there in 1705, at the gate; John Sisson the joiner billed the same year for oak shutters "in front of the coledg", which possibly were connected with Price's work.[11] At Castledurrow John Owens, carpenter, billed for "making and setting in three windows fitting lintels for them making seats and backs for them and two pair of window shuts in the dwelling house" in 1713, proving that very early the shutter was also made by carpenters. The joiner at this house, John Rudd, made window shutters in 1716, but Owens and another carpenter John Coltsman, were responsible for making lights in 1715. There seems to have been no set division of labour at Castledurrow, with joiners and carpenters carrying out similar work through the early eighteenth century.[12] The Fingall accounts mention that Patrick Savage, carpenter, not only constructed the shop frame for two new houses in Church Street, Dublin, in 1738, but also the sashes, sash-frames, architraves, cases, window-boards, shutters and inside casings to the windows and he also hung the windows.[13]

In his *Treatise* Aheron allocates the windows, *Lutheran* lights and skylights to carpenters, along with sash-windows, sash-window-frames, and sash-lights, the joiner being

responsible only for the window boards, "sopheta-boards" (soffits), cheeks or jambs, and skirt boards and window shutters.[14] Such division was not followed at Trinity College during the century, as the carpenter was as often responsible for sashes as the joiner. Joseph McCleery, joiner (in partnership with Moses Darley) submitted proposals for sashes and frames for the Printing House in the early 1730s, as did Isaac Wills, carpenter.[15] A carpenter William Scott charged for "sashes and frames, slipt & stopt, complete" along with "front shutters, sophets, backs and elbows" at the South Wall watch house in 1795.[16] At Townley Hall, Co. Louth in 1807, the carpenter Patrick Toole (who may have fronted a larger firm) was paid for making patterns for the glazing bars and for the hall windows. Humphries' *Irish Builders Guide* warns the public about being deceived in the price of sashes, which are carpenters work.[17]

The clearest trend shown by the above information seems to be that the carpenter retained much of the market for making windows until the early nineteenth century, when larger firms which included employees specialised in specific jobs such as window joinery began to tender for composite contracts. At the Royal Hospital in 1817 a general carpentry contractor, John Manders, quoted for sashes and frames among other jobs.[18]

Window work: tools and joinery methods

The tools required by joiners, as listed in 1703, included the rabbet-plane, and moulding planes; round, hollow, ogee, snipes bill, grooving (etc), with ranges from ½ or ¼ inch to 1½ inch.[19] The availability – or not – of tools and equipment was instrumental in the evolution of the sash: it is said that early sashes were made in two parts due to the awkwardness of running moulded lengths when working on site with tools not yet specialised for the sash-window trade. (This cannot be held to be true in all cases as Louw has shown by giving examples of single-piece glazing bars in sashes of the 1680s.) This author also points out that due to the complicated joints required, only the best joiners made the early sashes until the technology became common knowledge. In places such as London it appears that sashes were mass-produced before the end of the seventeenth century, presupposing a high degree of specialisation and standardisation (such familiarity with the new window may be responsible for some of the sashes at Kilmacurragh which have single piece glazing bars but which otherwise appear to be original).[20]

In the eighteenth century the autonomy of the maker of windows – whether carpenter or joiner – was eroded due to the rising status of the architectural profession and the craftsman became merely an executant, dependent on the working drawings of the architect.[21] In the early eighteenth century there are only overall dimensions noted on drawings, with the details left to the master joiner, but common inaccuracies led to changes in the order of control. The drawing of a window at Dromoland (*c.*1740, attributed to Aheron) specifies both timber and dimensions; this is the first Irish drawing showing a degree of control by an architect. The proliferation of architectural and technical guides in the late eighteenth and especially in the nineteenth century caused such a degree of standardisation in joinery detail that the drawings for many nineteenth-century urban houses list only the dimensions of the openings, all else presumably being apparent to the executant.[22]

Sir John Perceval's agent, Taylor wrote in 1703 that it would not be amiss for Perceval to ask some of those who had lately built in Dublin of the prices they had paid for their sash-windows of a certain dimension.[23] The valuation of work soon became standardised, as part of the removal of control of the making of windows and other work from the joiner or carpenter to the architect. In general it would appear that tradesmen calculated payment by retrospective measurement, corrected from the tendered estimates.[24] The system of measurement done by architect or clerk of works was held in contempt by many because of the ease of corruption. The architect's control over the valuing of completed work was contested by the 1750s, and culminated in a scandal which implicated the Surveyor General, Col. Thomas Eyre.[25] Though this method of measurement continued to be the norm well into the second half of the eighteenth century (until the measuring profession became established), the huge amount of work undertaken by the Barrack Board in the 1750s seem to have contained a mixture of contractors' work and payment by bill of measurement. Cost differences were noted at Charlesfort Barracks where for window sash work, contract rates at one shilling and four pence per foot were cheaper than by bill, at one shilling and five pence.[26]

Salmon notes in *Palladio Londinensis* that windows should be measured – when being valued – from the underside of the sill to the top side of the cap piece, and from outside to

outside of the jambs. Sashes were valued per foot or inch, while shutters were measured and valued as doors, by the yard square, allowing work and a half or double work.[27]

Construction of the frame and light presumably evolved from the continental experience passed on during the seventeenth century by immigrant joiners, who came from the tradition of "treble-rivetting" windows of double deal, complete with internal and external shutters, their casements "substantially strongly and curiously made". The frames of such lights were "rabbetted" apart from the "ground-sell" (the sill) which were bevelled.[28]

Hints on the better making of sash-windows in the early years of their use (perhaps reflecting unsolved details) were sometimes passed in correspondence between patrons, the answers drawn from their joiners. In 1703 an English joiner told William Taylor (who wrote to Sir John Perceval) "the frames of the sash-windows would be much the better, if they were framed a year or two, before they were made use of" and if they were made of Dansick oak. Taylor also said of this joiner, that he could inform him of the "real value" of everything to be used in the building.[29]

From the outset of window-making, the joiner was expected to accommodate artistic considerations in his work. "The square corners of the frame next the glass is [sic] bevelled away both on the outside and inside of the building that the light may the freelier play upon the glass. And upon that bevel is commonly stuck a moulding (for ornament sake) according to the fancy of the workmen, but more generally according to the modes of the times."[30] However, curtailment of artistic freedom was a consequence of the increasing standardization of window joinery in which few details were left open to decorative treatment. With the sash, only the glazing bars were free to be moulded; both from a commercial point of view and because of the small size of the bars, carving such as had been applied at Eyrecourt was no longer possible. Only at Carton, Co. Kildare in the 1730s (plate 161) was an egg and dart moulding carved on the glazing bars, and that was most probably in the principal room windows only. As only one such sash survives in Ireland, it is not possible to comment further on this point; however, it may be correct to generalise, as does Louw, that individual input into carved decoration met a death by cost or Palladian copybook.[31]

The profile of the glazing bar became standardised with just a few forms, but one late eighteenth-century example – at Ardress, Co. Armagh (diagram 11) – indicates that some joiners were finding an outlet for their artistic skills. As late as the 1770s an English author felt it necessary to mention that only joiners of quality should be let make sashes; "sashes well made, require good execution and should always be put into the hands of men of merit and experience."[32]

Responsibility for materials

Timber appears to have been provided normally by the joiner or carpenter, except in large one-off contracts and in contract work such as at Trinity and The Royal Hospital. Occasionally a bill specifies "work and materials", as does one of Sisson's bills to Trinity in 1710. It was not unknown for the joiner or carpenter at the College to travel to a forest – such as the Shillelagh Woods in Co. Wicklow – to supervise the felling of good oak, as was a trip charged to the college in 1720.[33] The joiner was also responsible for procuring the ancillaries of the window, such as brass buttons, sash cord and pulleys from the smith or ironmonger (and these articles are included in the detailed joiners' bills at Trinity College). The smith however was usually billed separately for the sash weights and hinges.[34] At Castledurrow the joiner John Rudd had to find all sprigs, nails, glue etc, while the client, William Flower undertook to provide the boards, ready sawn and Rudd was to employ any necessary workmen.[35]

Responsibility for repairs

Window work commonly included the repair and "easing" of window parts, at which joiner, carpenter and glazier had to be proficient. Problems with the standards of repair, or perhaps the fitness of the workers occasionally come to light, shown early in two seventeenth-century attempts at legislating for quality in tradesmen's work. Dublin Corporation petitioned in 1616 for a law that all artisans involved in repair (primarily those in the guild of carpenters) should have the necessary tools and furniture fitting their trades, the citizens having to provide only materials. Four years later the related problem of unfinished works came to the attention of the city legislators, who ordered the guild to address it by fining the transgressors.[36]

There are instances in maintenance accounts throughout the eighteenth century of time charged for repairs to old windows. Those carried out in Trinity College rarely elaborate on the

work done, but the renovation of the Rubrics in 1759 gave a great quantity of work to the contract carpenter, George Stewart, and his employees in which much old timber was reused.[37] At the Royal Hospital in 1823 the contractor, Edward Carolin and Sons, had to do "the best … to the present sashes and frames of the Master's Apartments" which included piecing the windows, puttying, new sash cord where needed, etc. It was intended that the old materials be used in general where possible.[38] A few years later Francis Johnston ordered more repairs, instructing that work was to be done to tack old sashes together which were sufficiently sound to be reused, but in which the tenons had given way. They could "be secured by small plates of iron screwed to the angles and the whole to be carefully puttied and painted." Johnston suggested that the person employed to do this work be referred to him for "particular directions".[39]

Biographical details

The known information on some late seventeenth- and eighteenth-century joiners and carpenters is worth recounting for its value as social history. Robert Massy or Massie, (*fl.* 1657 - 1712) who was enfranchised in Dublin (by favour and special grace) in 1657, was one of the joiners at the Blue Coat school in 1668 - 1673. The first and most important name in Irish sash joinery, Massy was responsible for much of the construction of "His Grace's Apartments" at Kilkenny Castle, in which sashes were installed (under his supervision) in March 1679 / 80. It is unlikely that he would have been put in charge of work of this skill unless he had prior knowledge of the new window type, and so it can be surmised that he visited London or other English sites where it had been newly installed, or perhaps he himself was English.[40]

John Sisson, (*fl.* 1681 - 1731) a joiner who worked on contract for Trinity College from 1705, made very many sash-windows for the college (he may have worked there earlier, but records are very patchy before 1699). He was enfranchised in Dublin in 1681, by birth (the only possible Sisson relative is another John Sisson, butcher). His apprentice John Brock was enfranchised in 1701.[41] As noted above, however, the first sashes made in Trinity noted in the accounts (in 1705) were not done by Sisson but by Price the carpenter. Sisson may have had three journeymen and apprentices Joseph and William Sinson (perhaps contemporary laxity of spelling is responsible for confusing Sisson with Sinson) and John Young, as he charged for

their work in mending sashes in the new building, Trinity College, in 1708. John Young was enfranchised in 1704, the son of Richard Young, joiner (enfranchised 1680 by Act of Parliament). A Joseph Sympson (again, probably Sisson) was enfranchised in 1702 by Act of Parliament, however no William Sinson or Sisson was recorded. It is possible that Robert Sisson, enfranchised in 1714 (freed by service) was related to John; his son Robert gained freedom in 1737 by birth.[42] The last mention of Sisson occurs in 1731. It is interesting to note that while Sisson was contracted for joinery, a succession of house carpenters were also entrusted with window work.[43]

John Rudd, joiner (*fl.* 1706-1740), was enfranchised in Dublin in 1706 as the apprentice of Robert Rudd (enfranchised in 1674 by special favour). Robert Rudd is noted in the rolls as having connections with R. Benjamin, R. Elijah and R. John, carpenters. John Rudd made the panelling and sashes at Castle Durrow, Co. Laois in the 1710s (for which he signed a separate contract with the owner, Sir William Flower. Benjamin Rudd, the carpenter / builder who erected 42-3 St. Stephens Green in 1745-6 may well have been related to these earlier Rudds.[44] Benjamin Rudd (listed as a carpenter) was one of twelve such tradesmen who subscribed to Aheron's *Treatise* in 1754. The sole joiner who subscribed to this book, Mr John Foxhall, was not enfranchised as such, but three other Foxalls are, and point to a family business. Zachariah Foxall, turner, was listed in 1709, while in 1741 Thomas, joiner, was admitted as the son of Zachariah and in 1753 William, also a joiner, was admitted by service to him.[45] Anthony Godfrey, whom we have already encountered as he practiced as a glazier, was enfranchised in 1708, and his son John was made a freeman in 1730. Both may have carried on joinery as well as glazing; indeed they may have had a composite firm of the type found more often later in the century, dealing in glazed sashes.

As carpentry contractor to the Royal Hospital, Trinity College and Parliament House during the 1750s and 60s George Stewart must have had one of the busiest carpentry firms in Dublin at the time.[46] Alexander Childs took over the carpentry contract for Trinity College in the 1760s, which included window work. He died *c.*1790, and from 1791 to 1793 Mary Childs, his widow, billed alone for carpentry work. After this date the bills are from Mary Childs and Sons. Brian Bolger measured work done by the firm in 1793, including "ovella" sashes with

semi-circular heads. However, the integrity of both husband and sons was called into doubt by the college in 1795, and the firm lost the contract.[47]

In summary, the craft of window joinery, though empirically based, was carried out on sound principals, to a pattern which, in sash-making, became established quite early in the eighteenth century. It was aided by the publication of guides and the gradual improvements in tool-making, although these and the loss of design control to the architect has served to hide most of the knowledge and experience that the craftsman had to offer – sound advice on timbers and preferred methods of jointing – behind the printed page. The structural soundness and longevity of very many surviving windows, however, testifies to the skill brought to bear even on the smallest of jobs.

APPENDIX FIVE

PRINCIPAL CONSERVATION TERMS AND DEFINITIONS

Authentic: established as of undisputed origin, genuine.[1]

Conservation: carrying out the most minimal intervention to the existing object or fabric which enables the process (es) of repair to be effective, which according to circumstance may include "preservation, restoration, reconstruction and adaptation, and [which] will be commonly a combination of more than one of these".[2]

Heritage: that which is – or may be – inherited by all. "The combined creations and products of nature and of man, in their entirety, that make up the environment in which we live".[3]

Integrity: defined as "wholeness, soundness, uprightness, honesty", this concept has both physical and ethical implications in conservation.[4]

Legibility: clear, easily read. In conservation, legibility means that new work must be distinguishable from the authentic fabric, to ensure no falsification of the evidence.[5]

Maintenance: the ongoing protective care of fabric or objects to retard deterioration, enabling them to retain their characteristics and materials (and sometimes to perform a function).[6]

Minimal intervention: the least possible interference with or intrusion into the authenticity of the historic fabric.[7]

Preservation: the stabilisation of fabric or an object in the state in which it is found, not effecting intervention purely for use or aesthetic enhancement of the fabric; possibly necessitating environmental alterations and physical intervention to enable its continued existence; it includes maintenance of the fabric in its existing state and the retarding of deterioration.[8]

Reconstruction: the fabrication of a new object, where the exact details of the original are recorded, without resort to invention.[9]

Replica: an exact copy of an historic object, made with the intention of deceiving the viewer into believing that it is authentic.[10]

Respect: pay heed to the values of the historic fabric; to "avoid degrading or …injuring or interfering with…[and] treat with consideration".[11]

Reversibility: the use of processes, whose effects may be effaced in future work.[12]

Restoration: carrying out work that enables an object or fabric to take on the state or appearance which it formerly took using only existing material, when this former appearance is known in all of its details; returning the existing fabric of a place to a known earlier state... possibly necessitating removal of accretions or reassembling existing components.[13]

Sustainability: the philosophy of ensuring continuity, of survival in perpetuity.[14]

Non-conservation terms

Refurbishment: to undergo renewal and repairs.[15]

Renovation: to make new again, repair, restore to good condition.[16]

Repair: The carrying out of work that enables an object or fabric to function in the manner for which it was originally intended; repair involves restoration or reconstruction and work should be treated accordingly, and distinguished from maintenance.[17]

ENDNOTES

INTRODUCTION

[1] Several ICOMOS (International Council on Monuments and Sites) charters and the guidelines of the statutory conservation bodies of several countries are used to underlie the conservation ethic, as these are appropriately rigorous standards worked out by eminent professional practitioners. Summaries of the principal conservation definitions are given in Appendix Five.

[2]Historians commonly take the Restoration of Charles II as marking the beginning of modern Ireland. Maurice Craig's book *Dublin 1660 - 1860* justifies this starting date in Chapters One and Two. Political and cultural developments taking place at the time marked a change of mindset, epitomised by the return to Ireland after exile of the foremost architectural patron of the age, James Butler, first Duke of Ormond.

[3]The primary texts include Leask, *Irish Castles,* Craig, *Classic Irish Houses of the Middle Size* and *The Architecture of Ireland*; the Georgian Society *Records*, five volumes; and de Breffny, and ffolliott, *The Houses of Ireland.* A little known article, by Joseph Geoghegan, entitled 'Notes on xviiith-Century Houses' in *DHR*, vol. viii. 2, 1945-50, is also of interest.

[4] Louw, The Origin and Development of the Sash-window in the Seventeenth and Eighteenth Centuries, with special reference to England, accepted at Oxford, 1981. Shortened to Origin of the Sash-window in the notes of this thesis, without quotation marks to distinguish it from Louw, 'The Origin of the Sash-window', in *Architectural History* 26 (1983). A second article by Louw is also important in the recognition of the role of glassmaking in window development, 'Window-glass Making in Britain *c.*1660 to *c.*1860 and its Architectural Impact', in *Construction History*, vol. 7, (1991). The same author's 'The Rise of the Metal Window', in *Construction History*, vol. 3. (1987 is of use for comparative purposes.

[5]M. S. D. Westropp, *Irish Glass, A History of Glassmaking in Ireland from the xvith Century*, revised by M. Boydell, 1978.

CHAPTER ONE

[1]In this study the term *window* describes the glazed aperture, whether fixed or opening, and the frame which holds it in place.

[2]The windows of Gothic church buildings form a separate group, which needs treatment in a study dedicated to the styles and detailing of such windows. Some classical churches are included in this survey where their window detailing is similar to that of secular buildings.

[3] The earliest buildings which could be reasonably accurately dated, and which were found during documentary research to possibly or certainly some retain original windows (full or evidence of) were visited. A broad geographical spread was attained. Peripheral commentary also provides a great bulk of the information on window development. Glazed windows were known in Ireland as early as the 13th-century - one William the glassworker was witness to a grant of land in 1258 and stained glass windows were accounted for in churches and Dublin Castle from the fourteenth-century. See Westropp, *Irish Glass,* p.19-20.

[4] The buildings used in this chapter to illustrate general developments in each period are listed in the inventory and are also used to clarify points of detail in Chapter Three. Where appropriate to explain the details of windows, imperial measurements are used. (One inch approximates to 25.4mm and one foot to 305mm. There are twelve inches to one foot.) Imperial squared measurements are also used.

[5]The date is taken from three sources within the building, on fireplaces and a wall. Glass was ordered for the windows in 1567, from Antwerp, indicating that the structure was well advanced at that stage. See Fenlon, *Ormond Castle*, p.37.

[6]See Craig, in *The Country Seat*, p.36.

[7]Leask, *Irish Castles*, p.148.

[8]E. M. Jope, in *A Guide to Carrickfergus Castle*, gives these bracket dates. The more reliable illustration is that of Thomas Phillips the cartographer; see NLI Ms 660. The other illustration is a basic depiction of the house, showing the entrance front, but may not be an accurate

description. See NLI Ms 2742 (4) [negative photostat], *Plans des Fortifications du Royaume D'Irlande*, drawn by Goubet for the Duke of Wittenberg.

[9] The researches of Harold Leask enable window details of Old Bawn to be included in this study, but the differences in style and detail between it and contemporary semi-fortified houses are considerable. As such Old Bawn is given more as a counterpoint than an example of what is believed to be typical of the period. Several other buildings of the period (and earlier) are worth including in the study as they show the progression either in fenestration styles or window detailing. Roodstown Castle, Co. Louth is a pale castle of the fifteenth century, having one mullioned and transomed window. The Mint, Carlingford, Co. Louth, is an urban castle with decorated window frames, as is the much restored Lynch's Castle, Galway (built for a mayor, partly rebuilt in 1787, as noted by the Rev. Beaufort in *Houses of Ireland*, p.29), both possibly sixteenth century. Shee's Almshouse, Kilkenny and The Earl of Cork's Almshouse, Youghal, built 1582 and 1613 respectively, retain some evidence of their original windows. The small basement openings of the 1612 extension to Carstown, Co. Louth, remain, although the other original openings have been altered. The pre-Cromwellian house, Killincarrig, Co. Wicklow, was recorded by Leask in detail and provides information on window detailing. Lastly, Royal Spur, Co. Tyrone, a plantation castle of *c.*1615 survives intact and is of interest because of its unusual plan in which the windows are in triangular projections.

[10] See *Ireland*, p.100. The ordering of the fenestration was apparently new at this time. Of Tinnehinch, Co. Carlow (after 1550) a two storey castle, Craig writes in *Ireland*, p.129, that there were "three storeys of perfectly regular windows, three to each floor, small and square at basement level, for security, large and square on the floors above, for comfort: as orderly as a house in Merrion Square [Dublin]". An unsubstantiated tradition has it that the roof of Kanturk was to have glass tiles - which would have been satisfyingly to the forefront of modernism. The tiles were allegedly smashed by the builder MacCarthy on hearing that he was forbidden to finish the castle: "they there and then tilted over or 'heeled' the glass intended for the castle..." (see 'Historical Notes on Buttevant', in *Journal of the Cork Historical and Archaeological Society*, 3, 1894, p.158.)

[11]See Fenlon, *Ormond Castle*, p.37. de l'Orme, *Nouvelles Inventions pour bien bastir*, 1561. At Carrick-on-Suir Craig notes that the ground floor windows were subsequently widened, which would seem likely, as mullioned windows on the ground floor would have easily been breached. He states that narrower ground floor windows on most of the semi-fortified dwellings was 'a minor concession to defensibility'. Craig, *Architecture of Ireland*, p.114n; the suggestion was originally made by Mr le Clerc of the Office of Public Works.

[12]A pair of elevations by the Elizabethan English architect Robert Smythson for Slingsby Castle, Yorkshire give both types, the first with vertically orientated windows, the second with horizontal. See *Architectural History*, vol. 5, 1962, p.76 (plate I/14). Smythson died in 1609.

[13] Loeber reproduces some of the sketches in *Decantations*, p.112-3.

[14] Summerson gives an interesting definition of the prevailing architectural taste in England, which reached London about 1615, in *Georgian London* (London 1945, revised 1969), p.27. It could be summarised as "the exclusive, snobbish sense of the recognition of certain fixed values by certain people ... a luxury import from abroad."

[15] See Craig, *Ireland*, p.123. Atkinson and Bagenal, in *Theory and Elements of Architecture*, p.319, stress that in order to enjoy contemplation of the external world, a higher stage of culture must be reached "to look upon Nature from quite a different point of view, to find a harmony and a source of strength where originally there had been conflict and fear".

[16] NLI Ms 6899, Lismore accounts for 1636 - 8 give details of the costs of stone frames, iron casements and leaded lights for the new dining room at the castle. Loeber, in his *Biographical Dictionary*, p.85, mentions that the mason Thomas Pranker or Pranklin tiled over the 'compass window' in the new dining room.

[17] Croker, *Researches in the South of Ireland*, p.64. The stone windows of Kilmallock were described as "small in proportion to the size of the rooms" by another visitor in 1812. See Weld, in the *Dublin Builder*, Mar 1, 1859, p.29.

[18] The examinations of these houses done at the start of this century by H. G. Leask provide almost the only knowledge about the window material and detailing of the mid-seventeenth century. See Leask, in *Studies in Building History*, and *JRSAI*, 1913, pp.314-325. Sir Arthur

Vicars is the other contemporary source on window detailing of the mid-seventeenth century. See Vicars, in *JKAS*, 1891 and 1907. These details are expanded upon in the analysis of window development in Chapter Three. An abbey converted to domestic use by the early seventeenth century, Tristernagh, Co. Westmeath, retains some timber framing to a window, but this has not been examined in detail.

[19] Most sixteenth- and some seventeenth-century castles and tower houses have no rebates in the stone reveals indicating that there were no glazed panels or lights. Shutters, oiled paper or linen were used to keep out the weather.

[20] There were many ironworks in Ireland in the seventeenth century, but the quality was poorer than that of imports. See J.H. Andrews, 'Notes on the Historical Geography of the Irish Iron Industry', in *Irish Geography* vol. iii, no. 3, 1956. The traveller Thomas Dingeley wrote in the 1680s that smiths were very poor, not being able to keep more than half a dozen pounds of iron; fuel was turf, sea or pit-coal which last was difficult to get. See NLI Ms 392, f.252.

[21] See McCann, in *Period Home*, no. 3 1981, pp.44-5.

[22]See Leask, in *Studies in Building History*, p.248. A later example of a similar dressing is found at Eyrecourt (see pp.111-2), of the 1660s. The dressing at Powerscourt was seen by David Griffin after the fire of 1974.

[23]See E. M. Jope in *UJA*, vol. 23, pp.97 - 124.

[24] The text of his tour is reproduced in Falkiner, *Illustrations of Irish History*; pp.368-9.

[25] The 1656 Down Survey description is quoted by Loeber in *IGSB*, vol. xiii nos 2 and 3, 1970: twenty four large windows - six feet wide by twenty five feet high on the first floor. As to be expected this is not borne out by the evidence that exists. The tallest windows on the south front are approximately ten feet high: a sample window was measured at ten feet one and three-eighth inches high by five feet seven and three-quarter inches wide. A sample window on the north front measured nine feet ten and a half inches high by nine feet three inches wide. (Dimensions taken by the author.)

[26] Writing in the 1750s, Bishop Pococke commented about Kilmallock, that "the Papists in King James's time were ordered to build houses in walled towns, this might be the occasion of

building them being in the style of that time", but some of the oldest houses had "windows of the Gothic arch", perhaps dating from before the disolution of the monasteries. Quoted in McVeagh(ed.), *Bishop Pocoke's Irish Tours*. See also the articles by Jope and Leask referred to above, and Waterman, in *Studies in Building History*, pp.243-250.

[27]The timber frame for casement lights did not reach England apparently until after the Restoration, as researched by Louw, although early seventeenth-century examples have been recorded in France. See Louw in *Architectural History*, p.51.

[28] A flavour of the appearance of early seventeenth-century Irish towns is given in *Advertisements for Ireland: being a description of the state of Ireland in the reign of James I,* ed. O'Brien, p.36. (This, as explained by the editor, was probably written by an Irishman, Henry Bourgchier, in 1623). "In the heart of the best walled towns, cities and borough, there stand many poor cottages of straw, chaff and clay to the eyesore of the whole town. Now if these were rebuilt, if every they chanced to fall and be reedified, of cagework, stone or bricks, and be covered with tiles or slate, and that in form and straight ofter [sic] the manner of building in these days, it would add much to the beauty of the town". A comment written about the houses of London previous to the 1666 fire by Misson, in *Travels,* gives some idea, if prejudiced, of the appearance of English urban buildings which may be compared to planted settlements in Ireland: "...nothing but wood and plaster, and nasty little windows, with but one little casement to open."

[29] The Royal Irish Academy Series of Irish Towns Atlases reproduce many extant maps. It is not known how exact or generic these depictions were. These small plain houses and cabins echo the drawings in the *Pacata Hibernia* of campaigns in the Elizabethan Wars (re-published Dublin, 1810). Another, possibly less reliable, source is John Derricke's illustrated *Images of Ireland*, written 1578.

[30]An account of *Dingle-i-couch* (an archaic name for Dingle, Co. Kerry) by Edward Wright, printed by E. Arber in his *English Garner*, vol. iii (1880), p.390ff, is quoted by Craig in *Ireland*, p.148. Gernon and Boullaye-le-Gouz are quoted by Falkiner in *Illustrations of Irish History*. Modern spelling and punctuation is used in quotations throughout this thesis.

[31] The contrast between the growth of Dublin and that of Belfast can be seen in the correspondence of the Belfast and Dublin merchants George Macartney and John Palland. Macartney received thirty cribs of window-glass from Palland in March 1679, but by that November only two cribs had sold, and those at a lower price – 20 shillings – than he had anticipated. Macartney's letter to Palland on receipt of the glass was pessimistic: "it'll be a long time er Glass will sell here being no building going on". See Macartney Letterbook 2. (Information courtesy of Peter Francis.)

[32] Copies of these manuscripts, by a soldier and traveller respectively, are in the collection of the NLI.

[33] The papers of the Waring family survive, uncatalogued, in the house. The Warings took possession in 1667. Dr Toby Barnard of Oxford has seen them, and mentioned to the author (just prior to the completion of this work) that much work was done in 1673-4. Further examination of the accounts may provide a date for the windows in question.

[34] The cross-window derives its name from the cruciform pattern of the mullion and transom. In France, where it is the usual type, the name *croisé* is given to it.

[35] Craig, *Ireland*, p.149. The church was built shortly before the death of the local bishop, Jeremy Taylor, in 1668.

[36] It was long assumed erroneously that very little building activity had happened at this time, due to the scarcity of surviving examples. However, research undertaken from the 1970s to date has unearthed references to very many more houses than heretofore known. The article by Rolf Loeber, 'Irish Country Houses and Castles of the Late Caroline Period', is excellent in its thorough examination of surviving information. Some other buildings noted in the study are mentioned here. Springhill, Co. Derry, after 1658, though remodelled *c.*1765, retains enough original material to be of interest. The blocked late seventeenth-century windows at no. 48 Montpelier Hill, Dublin, are useful for the opening dimensions of an ordinary urban house that they show. Morgans House, Co. Limerick, a late seventeenth-century house, shows an archaic style of fenestration, wherein the upper floor windows are altogether larger than those on the ground floor. The Bishop's Palace, Clonfert, Co. Galway (of Restoration date), retains what

might be two original Venetian-style windows. Mosstown, Co. Longford and Anngrove, Co. Cork, are two examples of late seventeenth-century houses which showed an adherence to classical fenestration. Both were demolished this century.

[37] Loeber, in *IGSB*, Jan-Jun 1973, p.29 gives several examples of such stipulations.

[38] Crookshank and Glin, in *The Painters of Ireland*, p.32, note, "The submergence and emigration of the greater part of the native Catholic aristocracy and their replacement by a new class, more interested in the acquisition of land than works of art, delayed the establishment of a culture by the best part of a century."

[39] See Loeber, in *IGSB*, Jan-Jun 1973.

[40] See Harris (Ed.), *The Whole Works of James Ware*, vol. 2, Chapter xxv.

[41] William Robinson, the Surveyor General for much of the last two decades of the seventeenth century, practiced a classicism not found before in Ireland; unfortunately no information on his sources survives. The Royal Hospital may derive its design from Les Invalides in Paris.

[42] Ormond, several times Viceroy, was a cultured and much travelled man. He was also responsible for Chelsea Hospital in London, built a few years later. This building appears to have had sash-windows installed from the outset, whereas the situation regarding the windows in the Royal Hospital is unclear (as will be covered below).

[43] *Egmont Papers*, vol 2, 14-5. August 3rd 1665. William Kenn, architect, to Sir John Perceval. This great height (for Ireland) had been used before at least once, as seen at Jigginstown.

[44] Ruskin, *The Stones of Venice*, vol 1., chapter XVI, p.176. To cement his argument, he states "less light is admitted, with greater loss of strength to the building, than by any other form."

[45] This house is of an unknown date, but appears on inspection to have been a rural house of the seventeenth century later incorporated into an early eighteenth-century street (as per Brooking's 1728 map), at which time the orientation of the house was changed and larger windows were opened.

[46] Huygens, Constantin den Zoon: 'Journal 1688-1696', in *Werken Historisch Gerrootschap Utrecht*, 23, p.294.; (1690, July 9). The author would like to thank Prof. Henti Louw of Newcastle University for tendering this information. John Dunton, *Tour in Ireland*, f.15. A late

nineteenth-century comment describes some Dublin houses near Montpelier Hill: "until about 1879 there was a very picturesque group of old houses in North Brunswick Street at the corner of Constitution Hill, they had high pointed gables and small windows." The author (who seems to have been something of an antiquarian) was sure that they predated the Williamite wars. From a notebook by Joshua Allen, Dublin, 1899, in the National Gallery of Ireland. The comments of nineteenth-century travellers are given later in this account.

[47] See Craig, *Classic Irish Houses*, introduction, p.24. Arthur Gibney explained to the author the prevalent methods of walling, which made them necessarily thick. Two faces of mortared stone were constructed, not bonded to each other, and the intervening space was filled with rubble and mortar.

[48] Leases of 1664 for plots in the newly set St. Stephen's Green in Dublin stipulated the building of brick and stone houses, of at least two floors high and a cellar if desired. See *Calendar of Ancient Records of Dublin* [*C*.A.R.D], vol. iv, p.297-8. A lease of 1666 covenanted the tenant to build brick dwelling houses of three stories in Bride Street, Dublin, with balconies towards the street. See 'Calendar of leases and deeds of St. Patricks Cathedral, 1660-89', in *JRSAI*, 1935, p.34; Bride Street, 15 August 1666. "Burnyate's Ground" is shown in a map held by Dublin Corporation, DCA WSC/maps/564, dated 17 Jan 1680. Urban building size in Ireland seems always to have been on a smaller scale than on the continent (though it relates to those of British cities). In Ireland the predominantly agricultural economy did not lend itself to large scale mercantile use of domestic houses.

It seems that stone and brick buildings were far more usual than timber cagework structures by the end of the seventeenth century, but isolated examples of half-timbered houses remained in many towns until the early nineteenth century. Many sixteenth-century urban cage-work houses survived in cities, recorded in prints of drawings by antiquarians of the late eighteenth and early nineteenth century. See: Frazer, W., 'On Irish Half-timbered Houses', in *JRSAI,* 1891, and D'Alton, *History of Drogheda with its Environs*, pp.101-104. It is hardly surprising that masonry retained its prominence over the timber and wattle framing of planters' houses, due to the damp Irish climate. The fire of London may also have had the salutary effect of promoting

buildings of brick and stone in Ireland. However, "framing" of buildings was still carried out in the 1680s: Eyrecourt was a vast, timber-framed brick building, and an account of the new session house in Mullingar "very large and spacious according to the mode of modern architecture" told of it being "a Framing" in the 1680s. See, *Memoirs, Notes, Natural History, etc.*, Book A, page 332-3, TCD Ms 883 / NLI P.947. The Rubrics, Trinity College, has structural timbers throughout its walling, uncovered in repair work. (Information from Michael Murray, buildings department, TCD) As will become apparent in the third chapter of this study, the walling material type appears to have had a negligible effect on the design of the windows.

[49] See *IGSB*, Jan-Jun 1973, p.33.

[50]BM Add Mss, Egmont Manuscripts. ffolliott and de Breffny, in *Houses of Ireland*, pp 66-71, give a detailed summary of the correspondence of the 1660s to 1680s relating to the house. The lantern may have been covered (or sided) with sheet lead; this is indicated in a letter from Perceval: BM Add Ms 46958B, f.246 (25 Feb 1681/2) "ye additional weight of ye lanthorn and ye lead upon it" would make the roof sink. This letter also refers to a consignment of five tuns of sheet lead shipped to Christopher Crofts, a Cork merchant.

[51] McLysaght, E., *Calendar of Orrery Papers*, IMC 1941, p.269; letter of Capt. H Boyle to the Dowager Countess Orrery, 1682/3.

[52] Clifton Taylor, *The Pattern of English Building*, p.395.

[53] The reader is referred to other works for a discussion of the Continental style, notably Thornton, *Seventeenth-Century Interior Decoration in England, France and Holland.* Lead work lasted well into the eighteenth century, as evidenced by remaining accounts. In many Irish accounts it is not possible to ascertain if quarry glazing is being inserted into new windows or repaired ones due to the lack of background knowledge of the building. See also Chapter Three.

[54] The benefits of iron as a glazing material were argued by Sir Roger Pratt in 1660, as being superior to the foreign timber window: "The best material whereof to make great folding casements is that of iron for there is no sort of timber which can be so well seasoned, but that it will be altered by the weather either as to warping, swelling, cracking, swagging etc." From

Louw, in *Construction History*, 1987, p.31. Louw quoted from R. T. Gunther, *The Architecture of Sir Roger Pratt* (Oxford 1928), p.72.

[55]The traditional distrust of timber as a structural material by the Irish possibly led to a greater use of iron framing in casement windows than timber, (and possibly militated against an early introduction of structural timber casement windows, of the form seen in the Brazen Head [see p.138]) though evidence in favour of either is very skimpy.

[56] One of Dingely's drawings is reprinted by Loeber, in *IGSB*, 1973, p.28. The Dublin Castle elevations illustrated here have the cross-division at about one-third from the top, which is similar proportioning to that measured at Eyrecourt. The cross-windows at Waringstown House (kitchen) are divided laterally in an approximate proportion 2:5.

[57] Richard Cumberland wrote of his visits there in the late eighteenth century, "not one of the windows of [the] castle was made to open". See Cumberland, *Memoirs*, p.279.

[58] Subsequent alterations (the fixed lights in the kitchen are of a later date) have obscured the original configuration - there is one casement light, to the top row. The cross-window in the library (with earlier blocked timber lights) has casements to one top and one bottom opening. The two other remaining cross-windows (at the top of the stairs) were not examined in detail. The large casement at the Brazen Head (measuring about forty one and three-quarter inches wide) is likely to be atypical and due to a hesitancy in dating it has been catalogued with the next period.

[59] See Louw, 'Origin of the Sash-window', p.54. Much later a practical reason for the outward-opening casement was given by Newlands, in *The Carpenter's Assistant*, p.187. "In exposed places they should always be made to open outwards, as the effect of wind is then to close them and make their joints tighter."

[60] *Egmont II*, p.14-5 August 1665, William Kenn to Sir John Perceval. A conjectural isometric view of the house as projected in 1670 is reproduced by Loeber in *IGSB*, 1973, p.26.

[61] Smith, *Herbert Correspondence*, p.199, no. 347.

[62]At Charleville Castle, Co. Cork, a glazier, John Maning, was retained on contract by the Earl of Orrery in the late seventeenth century (from the 1660s to 1680s and possibly for longer). See NLI, p.7075 and 7076, and also Appendix Three.

[63] *Herbert Correspondence*, p.157, no. 263. The agent wrote to Lord Herbert explaining the need to send to Cork for glass, hoping a glazier could be found locally, and some drawn lead "if any be come over".

[64] See *Analecta Hibernia*, vol. 15, p.175. The proprietor was given 14 days to remove the window, under threat of a penalty of £5. Later comments are found in Caulfield (Ed.), *The Council Book of the Corporation of Cork.* In 1714 it was ordered that a shop window be reduced to a reasonable breadth (p.372) and in 1725 a statement was made that shop windows were standing out too far (p.459).

[65] Quoted in Falkiner, *Illustrations,* p.101.

[66]*Analecta Hibenica*, vol. 32, 1985, p.97, mentioned in a letter by Lord Longford to John Ellis, June 1692. In November the same writer wrote that Butler would not lay out "two pence" towards repairs.

[67] See the *Register of the Philosophical Society*, Dublin, 1707, ff. 24, 25, 25v. A diagram of the house is included, clearly showing diagonally paned windows. Dr McParland of TCD kindly supplied this information.

[68] See Louw, in *Architectural History,* 1983. The first documentary evidence of a hanging device being attached to timber windows is at Whitehall in 1669 (p.63). Louw does not see the sash-window as having evolved purely from sliding timber windows, which were known in France from the 1630s. Rather, defining features of the sash-window which are not found in other sliding windows separate it into a class of its own. Cased frames and hanging mechanisms – pulley, cord and weight – define the complete sash-window, although early examples may have solid frames with a box made up to the inside to house the weights (Louw, Origin of the Sash-window, p.148-9).

[69] Here the windows were cross-mullioned casement lights, but as discussed below, the windows of the Masters Lodgings may have been sashed. No records of the building work

survive. The earliest reference to these windows, in the comprehensive Governors' *Minutes*, describes works necessary to *repair* the sash-windows. The next section of the historical account elaborates on the early sash-windows of the Royal Hospital. Robinson's latest buildings, including Marsh's Library, Dublin and Kilmacurragh, Co. Wicklow were sashed from the outset.

[70] See Loeber, *Biographical Dictionary*, pp 75-77. Molyneux studied law in London from 1675, and knew Hooke probably through a mutual friend, the astronomer Royal, Flamsteed, by 1676.

[71] Both references (the former called to the author's attention by Dr McParland) are transcribed here to illuminate the mindset of the patron and work of the craftsmen. Duke of Ormond, at Kilkenny to his son, May 7, 1678: "It begins to look very pleasantly as your mother has ordered it, and will be little inferior to any you will see abroad, if we can compass the making of a house in some degree proportionate to the seat and what is doing abroad." (*Ormond* n.s. vol. iv). Baxter to the Duchess, March 20, 1679/80: "His Graces apartment is now solely under Massy, who hath many hands at work to finish it and very diligent to have it finished by the time limited. The sashes for the windows are all made, but not got up." (*Ormond* n.s. vol. v.)

[72] It is not known who designed the new apartments at the castle. Several architects were employed by the Ormonds in these decades: Robinson, Hugh May and (via May) Christopher Wren. The Kilkenny architect, James Archer, may possibly have had a part in the work, as he had previously overseen work there (repairs to the roof of Kilkenny castle in 1669). See Loeber, *Biographical Dictionary*, pp.14-17. It is likely that Archer was familiar with the new window type, as he worked predominantly in England and France, and knew many of those who frequented the court circle, such as the Earl of Arlington. Archer was back in Ireland by 1677 (and was working in Kinsale until 1679), although it appears that he died in 1680.

[73] See Appendix Four for the known details on Massy.

[74] This anonymous traveller (thought to be William Molyneux) wrote of journeys made to Connaught, the North and the West in 1708 and 1709 (NLI Ms 5628).

[75] *A Prospect of the City of Dublin from the North* made by Charles Brooking, dated 1728 on the inscription. See *The City of Dublin, 1728*, introduced by Craig for explanatory notes and prints of the illustrated buildings.

[76] Buildings that retain evidence of window frame or sash joinery are included in this first category. The Brazen Head Inn was apparently built before 1668, but there is no evidence that the window in question is that early. The date of Beaulieu has not been established satisfactorily: having been assumed to be of the 1660s for many years, Dr. McParland tends now towards ascribing a date in the 1720s for much of the work. See Appendix One.

[77] Other buildings referred to, here and in Chapter Three, include The Mayor's House, Galway, The Exchange, Cork and Dr Steevens's Hospital, Tailor's Hall and the Mansion House, all in Dublin. One church, St. Mary's, Dublin, is mentioned due to the baroque design of its east window. The windows at Waringstown that appear to belong to the 1690s and later are included in this section.

[78] See Loveday, *Diary of a Tour*, p.48.

[79] Springhill has been dated variously at *c.*1658 (Rowan, *North-West Ulster,* p.39) and *c.*1695 (Craig, *Classic Irish Houses*, p.88). The tall stair window was square-headed originally, but was later converted to an arch; the marks of the change are still visible on the internal wall and reveal. The frame may be original (as is the panelled reveal) but the present sashes are of the late eighteenth century.

[80] The reference to Derry is found in the accounts of Bishop King (TCD Ms 751 (1)), June 1694. See Loeber, in *IGSB* Oct-Dec 1973, p.105. The reference is to paying James Compton for making a sash-window for the study above the street. Another reference in the King papers is for a payment to the painters for puttying of sashes in sash-windows in April 30 1695.

[81] PROI Wyche Collection, 1/172: Christopher O'Brien to Sir Cyril Wyche. It appears from other correspondence that Wyche had left Ireland five years previously, indicating that the sash-window began to be commonly used during the last half of the 1690s. For the Provost's house, see TCD P.2/8/11, bill of George Delane, work ending 20 November 1699. This building was demolished in the 1750s.

[82] See *The Dublin Intelligence*, 29 April 1710. The same issue referred to Lord Dillon's house in Roscommon as sashed. The *Post Bag* of 19 November 1713 mentions a Capel Street (Dublin) house as "shash'd". Information courtesy of Dr MacParland, TCD.

[83] BM Add 47026, (Egmont Papers) Perceval to D. Dering, Cork, May 1712. This building still stands, though much altered and extended. The Exchange at Cork, *c.*1708, is illustrated as one of the earliest Irish buildings fitted with sash-windows, in Louw, Origin of the Sash-window, p.221.

[84] See PRO Cust 1/18 f.77; information courtesy of Dr McParland, TCD.

[85] Swift, *A Short View of Ireland*, pp.12 and 15. The polarised society of Ireland, with the Penal Laws forbidding participation by Catholics and other dissenters in commerce and polite society, led to extreme poverty side by side with ostentatious wealth. Swift wrote many polemical articles about the injustices of this society, castigating the contemporary fashion for buying imported goods and the lack of entrepreneurial skills to start indigenous industries. One should bear in mind, however, that Swift regarded the world from a pessimistic viewpoint.

[86] Craig remarks in *Ireland*, p.180, that as "over five-sixths of the land had recently changed hands in circumstances of greater or less violence, nearly all the builders were 'new men'".

[87] See the doctoral thesis of Christine Casey, Books and Builders, TCD 1991. The earliest builders' guides printed in Dublin are copies of the 1730s, while earlier ones sold in Ireland were English or French.

[88] Early sash-windows were fitted from the outside with the full depth of the box frame exposed. See Oram, in *Taken for Granted*, p.231-4. Such fixings would be relatively easy to remove. See also Chapter Three.

[89] See *Maxims Controlled in Ireland* for Swift's attacks on the building industry.

[90] The cross-windowed wings (subsequently demolished) at Castle Durrow can be seen in Malton's print. Measured drawings done of Shannongrove in 1971 indicate some cross-windows; the current windows are sashes of a more recent date, however the mullioned frame of one window appears to be original. As Craig notes in *Classic Irish Houses*, p.7, "in Ireland mullion and transom windows lingered on in basements and out-offices long after its

banishment from the front proper". According to Jill Kerr, senior architect, English Heritage, (in conversation) who is an expert on historic glass and windows, this hierarchy of windows was pragmatically based, the higher cost of sash-windows and crown glass leading to the continued use of simpler, cheaper types of window.

[91] See Sadleir and Dickinson, *Georgian Mansions in Ireland*, p.5. The authors say that dimensions of 6'6" by 2'9" was a usual proportion *c.*1700, whereas later 6' by 3' was more general.

[92]Campbell, *Philosophical Survey*, p.23-4. For the date of the building, see O' Brien and Guinness, *Dublin - A Grand Tour*, pp.48-50.

[93] Craig, in *Ireland*, p.202 does not go so far as to doubt the originality of the Venetian window, but merely points out (in a footnote) that it would be extraordinarily early. See also Garner, *Kinsale Architectural Heritage*, pp 14 and 16.

[94] William Stuart, the late owner of the house, dated it to 1719 from research of the deeds. There is a tentative attribution to Burgh (Guinness and O'Brien, *Great Irish Houses and Castles*, p.37). It was probably built by the Rothery family (prominent builders in the south-west) for Robert Baillie. This information was given by Mrs June Stuart.

[95] See Chapter Three for more detail on the subject of over-door lights. The Georgian Society *Records* show many similar types.

[96] McGrath and Frost, in *Glass in Architecture*, p.97.

[97] This is postulated by Atkinson and Bagenal in *Theory and Elements of Architecture*, p.273. See RHK 1/1/1, f.195, "three slideing casements at 4s 6d each". However, one mention of a sliding casement in the Trinity College accounts includes the specification of "lignoviti" pulleys and cord, and so obviously refers to a vertically sliding sash-window. See TCD P.2/58/25, Wills, 10 Nov 1729.

[98] There are wooden pulleys, painted over, in the frames of the original windows in Marsh's Library, which seem to be original. The early sash-frames at Doneraile Court each retain one wooden pulley in a grooved-out solid box-frame.

[99]There are earlier reference to 'shashes' in the Governors' Minutes of the Hospital, but the first mention of pullies occurs in March 1711 (RHK/1/1/2, p.135), in an estimate for windows for the Governor's Lodgings.'

[100] Morris is quoted by Parissien, in *Palladian Style*, p.133. In reality, the frames were purposefully highlighted in Palladian buildings, as discussed in Chapter Four, p160.

[101] Halfpenny, *Practical Architecture*.

[102] See Louw, Origin of the Sash-window, p.114.

[103] The heavier detailing of the sash-bar was not in fact a purely Palladian innovation, but was taken from Vanbrugh (as was the use of blocked and rusticated masonry dressings). See Chapter Three on these points.

[104] See Rowan, in *IGSB*, January - March 1964, especially p.11. *Gothic Architecture Improved* was a reissue of *Ancient Architecture Restored and Improved* (1742).

[105]As stressed by Rowan, in *IGSB*, p.13: "To compromise the comfort of the interior by winding passages, low doors or inadequate windows was not thought profitable."

[106] Letter dated 18 August, 1759. See Day, (Ed.), *Letters From Georgian Ireland*, p.172.

[107] See Chapter Three for an expansion of the topic, and Louw, Origin of the Sash-window, pp.237-9.

[108] Two buildings by Pearce, the most gifted architect of the day, Bellamont Forest, Co. Cavan (introduced in the previous section) and the Bishop's Palace at Cashel, Co. Tipperary (1730) are discussed in the text as important examples of early Palladianism, but are not included here as no original sashes remain. All of the buildings chosen to represent the period retain some or all of their original sashes and / or frames.

[109] Buildings and windows used for comparative purposes include (in rough chronological order) the glazed bookcases at the library of Dr Steevens's Hospital, Dublin (attributed to Pearse and completed 1735), the Bishop's Palace, Kilkenny (1735-6), no. 50 Pope's Quay and nos. 2-5 Sheare's Street (formerly Fenn's Quay) Cork (both possibly *c.*1740), nos. 42-3 St. Stephen's Green, Dublin (1746), Castle Dobbs, Co. Antrim (*c.*1750), no. 42 Manor Street, Glasnevin

House (*c.*1750), and no. 2, Palace Street (*c.*1760), all in Dublin, and Brownes Hill, Co. Carlow (1763), and Castle Ward, Co. Down (1763).

[110] The Dublin Society was granted the prefix "Royal" in the 1830s. Throughout the eighteenth century money from Parliament for aiding arts and industries was channelled through the society. The *Commons Journals* are a useful source in this regard. See also Meenan and Clarke (Eds.), *The Royal Dublin Society*.

[111] See McParland, in *IGSB* Jan-Mar 1972, or Craig, *Dublin*, p.172 et seq., for a comprehensive view of the work of the Commissioners (properly titled the Commissioners for Making Wide and Convenient Streets, Dublin).

[112] See also Smith, *The Ancient and Present State of the County and City of Cork*, and *The Ancient and Present State of the County of Waterford*, and Harris, *The History and Antiquities of the City of Dublin*. The map of Drogheda by Ravell (1749) and the drawings in *A Book of Maps and References to the Estate of the Rt. Hon. Richard L^{d} Viscount Fitzwilliam*, 1762, by Jonathan Barker depict a mixture of styles in old and new buildings. The number of ancient edifices in Drogheda is a reminder of the slow rate of change. Most of the buildings of the Fitzwilliam Estate folio marked as "old house of" display few if any signs of conscious architectural design, and are almost interchangeable with those of Thomas Dineley, drawn eighty years previously.

[113] Day, (Ed.), *Letters from Georgian Ireland*, p.26, 9th October 1731 and p.124, 12th June, 1732. *A Description of the City of Dublin, 1732, by a citizen of London*, reproduced in *CARD* vol. x, p.520.

[114] Countess of Cork and Orrery (Ed.), *The Orrery Papers*, vol. 1, p.157. Berkeley, *The Querist*, 1735-7, part II, p.247. In actuality, the "humour" of building was prevailing, in quantities never before seen, especially in towns and cities. As with Swift, the negative appears to have been accentuated. The Rev. Henry, in *Hints*, expressly defends his detailed description of the newly built Hazelwood Co. Sligo, to counter the usual foreign criticisms of the lack of well-placed or well-executed Gentlemen's Seats.

[115] Noted by Dr McParland in the newsletter *Pue's Occurences*, 10-14 July 1739.

[116] See Loveday, *Diary of a Tour*.

[117] Loveday, *Diary*, pp.33, 28, 29, 43, 46-7, 54, 56, 58. The explanation for his reaction to the numerous sash-windows of Ireland may well be that he came to a country in which the vast majority of buildings had been reconstructed since 1690. In England no such root-and-branch rebuilding had occurred, therefore a far greater number of older, unsashed buildings remained.

[118] Of the similarly proportioned no. 3 Henrietta Street, Cruickshank and Burton in *Life in the Georgian City*, p.143, write that it possesses "a most austere, though exquisitely proportioned, facade. Ground and first floor windows are both double square in size, with their heights matched by the vertical distances between ground-, first-, and second-floor windows. The second-floor windows have the 2:3 proportion; the attic windows are square. The distance between second-floor and third-floor attic is the same as the height of the attic window. The broad area of wall between windows reflects the early eighteenth-century Palladian preference for the Italian practice of small windows and generous piers. Useful for creating shady interiors, it was not entirely suitable for Ireland."

[119]Aheron, *A General Treatise on Architecture*. (A manuscript dated 1741 survives, but the published version appeared in 1754.) In the 'Advertisement' he advocates tall windows, noting though that "some are of another opinion, who make their windows very low, and very broad, which is inconsistent with the great height we give our modern buildings." This drawing was brought to the author's attention by David Griffin of the Irish Architectural Archive.

[120] Craig, *Classic Irish Houses*, p.22. Richardson, *An Introduction to Georgian Architecture*, p.26. Richardson comments upon the individuality of Irish Georgian architecture, which developed its own characteristics as early as the 1750s, but does not list them.

[121] Neve, *The City and Country Purchaser and Builder's Dictionary,* p.282. Neve was not making a particularly original point: Henry Wotton, the early seventeenth-century English author, included it in his book *Elements of Architecture* (1624), p.52. The quotation is reproduced by Louw, in Origin of the Sash-window, p.115.

[122] Aheron, *General Treatise*, pp.58-9.

[123] Exceptions occur to this rule, as at Uppark, Sussex, in which the late eighteenth-century sashes (seen before the recent fire) have the nine over six pane arrangement to the first floor. Some American buildings designed by Irish architects could be examined to see if they have the Irish arrangement, as does the White House, Washington D.C (ground floor), by James Hoban, the emigré Cork architect.

[124] The Act of Parliament was 3 Geo II, Chapter XIV (*Statutes,* vol. v, p.411). It was read in the House by the Surveyor General. Although fire precautions were obviously important, the very use of timber for windows was a potential hazard, which in England led to many attempts to make metal windows throughout the century. See Louw, Origin of the Sash-window, pp.181-182.

[125] Hawksmoor is quoted in this regard by Louw, in Origin of the Sash-window, p232. "It is fancied by most of the workmen and many others that the placing of a window of chass to the vey outside of a wall, gives more light, than when it recedes .... But this I positively declare a mistake, for the glass being a diaphonous plain, or rather an invisible septum to keep out the weather it is no matter in what part of the wall you place it, whether outside inside or Middle." From 'Explanation of the Design for All Souls', 17 February 1715, pp5-6.

[126] Orrery was speaking "of the elegance of which Cork was not entirely devoid". Quoted by O'Brien and Guinness, in *Dublin A Grand Tour*, p.74. The phrase originated with Alexander Pope. The Reverend William Henry described Hazelwood in *Hints*, p.33.

[127] See the drawing shown in Colvin and Craig, *Architectural Drawings in the Library of Elton Hall by Vanbrugh and Pearce,* no. 72, signed and dated 1730. The present over-door light is later (and comes to a lower line, as seen both from the joinery within the doorcase and from the Pearce drawing). The Elton Hall Collection is now in the Victoria and Albert Museum, London; the Irish Architectural Archive has photographed all drawings of Irish interest.

[128] Payne is quoted in Craig, *Classic Irish Houses*, p.48. The *Freeman's Journal* of December 1768 and January 1768/9 had a series of articles on architectural criticism, which generated some responses, including the letter from which the quotation is taken, issue of 7 Feb 1768/9. This situation appears to contrast with that in Britain, where the dormer found lasting use; in

cities such as Edinburgh several varieties of dormer windows are feature in the houses of the New Town.

[129] NLI ms 8037, Fingall Papers. The carpenter's bill refers to work done for two new houses in Church Street and mentions six cellar windows and four single lights. Thomas Holmes' glazier's bill details the cost of lead squares and "saudering and part new leaded four lights", and new lead work. A later bill, of 1758, requests payment for work done by the glazier John Orpin in 1748, including 32 feet of new lead and glass for the cellars.

[130] Nos. 42-43 Parliament Street, Kilkenny (mid-eighteenth century) appear to be built on an earlier basement, of which the mullioned windows survive; again, it cannot be confirmed that lead glazing was used after the rebuilding. O'Dwyer, in *IGSB*, 1996-7, p.19 links the Patrick Street houses to Christopher Colles, a Kilkenny architect who emigrated to America in 1771.

[131] The Reports are given in the *Commons Journals* vol. v (Appendix). Belleek, p.clxvi, Foxford, p.ccxxv, Sligo, p.clxxxiv.

[132] *Bishop Pococke's Irish Tours*, ed. John McVeagh (Irish Academic Press 1995), p.29, 22 June 1752. Pococke was taken with the 'beautiful' church' with its Gothic windows and 'handsom Palladian front of Ardbraccan stone'.

[133] Langley illustrates several plates showing Gothic glazing, with hexagonal and diamond panes; those at Leixlip are octagonal. See *Gothick Architecture Improved* (1747), pls. 28 and 29.

[134] On the 7 May 1799, an Act was passed "for Granting to his Majesty certain Rates and Duties on Dwelling Houses inhabited, according to the number of windows or lights therein respectively". Houses with five or more windows were taxed (the number eventually increased to those with seven or more). The schedule is printed in the *Commons Journals*, vol. xviii, 1799, appendix ccxxx. The window tax was finally repealed on 24 July 1851, after years of lobbying. Information on the various levies and countervailing duties on glass is given by Westropp in *Irish Glass*, p.138. Duty on imported glass was imposed throughout, while that on glass made in Ireland was imposed in 1825. The glass tax was repealed in 1845.

[135] Cooper, in *Crown Glass Cutter and Glazier's Manual,* p.110-1. In the three years to 1828 there was an increase in Scotland of only two percent in consumption of window-glass

compared to the 1791 statistic, whereas the use of brick and other building materials had increased nearly ninety percent in that time. Cooper, in Scotland, was discussing a different situation to that in Ireland. However the stark contrast between glass and brick use is stark. The English experience is recorded by Douglas and Frank, in *A History of Glassmaking*, pp.30-33. The halving of the window-tax in 1825 stimulated the demand for glass (presumably in Ireland as much as England), but manufacturers reported that this was still limited. Houses in continental Europe had more than twice as many windows as Britain according to R. L. Chance (of Chance Brothers Glassmakers). In the *Thirteenth Report of the Commissioners of Inquiry*, 1835, p.138, this manufacturer stated "there is no apparent increase in the consumption of window glass in England since 1790". He was of the opinion that the increase in the window tax to houses with as few as five windows "did more to check the consumption of glass than anything else".

[136] See Chapter Two and Appendix Three for details.

[137] McGrath and Frost, in *Glass in Architecture*, p.150, dissent from the usual view. They are scathing of what they call the "practically negligible" aesthetic development of the window since the classical period, and claim that "the nineteenth-century architect fell, not merely between two stools but between half a dozen of all styles and periods, and the upshot was that his windows, like the rest of his architectural components, were treated rather literarily than literally." These two authors were writing in an age which had just freed itself from the shackles of classical architecture, so their peevish opinions are understandable.

[138] Wilkinson, *Practical Geology*, p.126. Gotch, in *History of the English House*, pp.214-218, argues that the sash is more stubborn of treatment than the mullioned window. The latter can be either lengthened or widened by rows of lights and yet be in harmony with its neighbours; the sash-window is not susceptible to such variation, having to be the same width as all others on the elevation. As it was ill-suited to bay windows, these went out of fashion. In his thesis Louw discounts this argument as the sash-window itself does not have to be one uniform size; the mullioned light went out of fashion for other reasons. See Origin of the Sash-window, p.126.

[139] See Pool and Cash, *Views of the Most Remarkable Public Buildings, Monuments and other Edifices in the City of Dublin*; Thomas Milton, *Select Views of Ireland*, (drawn 1783); James Malton, *A Picturesque and Descriptive View of the City of Dublin* and Butler, *The Brocas Collection*.

[140] de la Tocnaye wrote that Lord Bandon was "amusing himself" by building an addition to his house and commented "it will not be as good as the first, but it is no matter; the rich should build and demolish, it is good for the country." See *A Frenchman's Walk Through Ireland*, p.86. The visitor Elstob experienced the other end of the social scale in the 1770s, on his first night in Ireland, in an inn at Skerries, Co. Dublin. "There were two openings, which, some time or other, had been windows, for the one had two panes of glass in it, - the other one, - the spaces being stopt up with pieces of board, clouts, etc." *A Trip to Kilkenny from Durham*, p.52.

[141] See Barrington, *Recollections*, p.12.

[142] See McGregor, *The Picture of Dublin*, p.50. Scott is quoted in Somerville Large, *Dublin the Fair City*, p.177.

[143] Elstob, in *A Trip to Kilkenny from Durham,* p.56, notes the stylistic source of peasants' houses, which had "a window of about a foot square, in the front, and a whited outside," as an "imitation of their tyrannic Lord's."

[144] An innovation which seems almost bizarre was described by the traveller Charles Bowden in 1791 who saw cottages glazed with slate in Stratford on Slaney, Co. Wexford. This was brought from Pheres in Sicily, of such diaphanous quality as to admit light. In his opinion it was not a good substitute for glass. Bowden, *Tour Through Ireland*, pp.71-2. It may have been porphyry.

[145] Croker, *Researches in the South of Ireland*, p.140.

[146] de Tocqueville, *Journeys to England and Ireland*, p.129, 158-9. Only the houses of the priest or the schoolroom were distinguished by windows.

[147] Mr and Mrs S. C. Hall, in *Hall's Ireland,* (vol. 1, p.6) record of Cork that "though the houses may be described as built in studied irregularity, the character is by no means ungraceful or unpleasing." They note of Waterford (vol. 1, p.115) that, "there are no public buildings

displaying any architectural skill and taste." They state that Limerick was elegant (vol. 1, p.120), with convenient buildings and rapidly improving to be one of the best cities.
J. G. Kohl, *Travels in Ireland*, p.14 (quoted by Somerville Large, in *Dublin*).

[148] See Frazer, in *Architectural History* 28, p.116 for the legal ruling. The *Minutes* of the Wide Street Commissioners of 26 September 1783 note that Mr Colles (possibly Christopher Colles, architect) was censured for having his windows too high by four and a half inches, and that he would be obliged to alter them. See Craig, *Ireland*, p.242. McParland notes, in *IGSB*, 1972, that Frederick Trench, one of the Commissioners, was allowed to have whatever height and proportion window he wished, in the ten lots he was erecting in North Frederick Street (*c.*1800).

[149] The minutes of Cork Corporation, 26 May, 1791, state that the houses planned beside one being built by Mr Shaw would have to have the sills of the second floor windows ranging with those of Mr Shaw. See Pettit, *The Streets of Cork*, p.70.

[150] Other buildings are also used in the text to illustrate specific points, including Kilshannig, Co. Cork (1765-6), The Mayoralty House, Cork (under construction 1768), both by Ducart, The Provost's House, Trinity College (*c.*1769) by Theodore Jacobsen, Powerscourt House, Dublin (1771-4) by Robert Mack, Mount Kennedy, Co. Wicklow (1782-4) by James Wyatt, Mountjoy Square Dublin (1792-1818), Dublin Castle Chapel (1807-14) by Francis Johnston, Dromoland Castle, Co. Clare (1826) by George and James Paine, Carlow Courthouse (1830) by W. V. Morrison, and several mid-nineteenth-century Dublin terraces. Earlier buildings in which windows of this era survive are also included. Rathfarnham Castle, Carstown House, Castletown House, Carton and Ardress, Co. Armagh (*c.*1664, enlarged and altered *c.*1770), are good examples. The large range of diversity in window styles from the mid-nineteenth century deriving from architectural eclecticism, and the contemporary patenting of a myriad of weather-proofing and locking devices is best dealt with in another study as this research is focussed on the development of the window up to its assimilation into the processes of the machine age.

[151] Ware, *Complete Body of Architecture*, Book III Chapter XXI, p.315-6, quoted by Louw, in Origin of the Sash-window, p.238-9 and *Construction History* 1991, p.50.

[152] Nicholson, in *Practical Carpentry, Joinery and Cabinetmaking*, p.98, wrote that casement windows were usually employed in Gothic buildings, which when used in other types of architecture were called French windows. Pocock wrote in *Modern Finishings for Rooms*, 1811, p.14, that "the difficulty of keeping out the weather with these casements is a great objection against the use of them, particularly in western aspects, where they are most commonly required", which sums up their drawbacks for opening onto country house gardens.

[153] A late eighteenth- or early nineteenth-century illustration by George Grattan (d.1819) of a row of houses by Christ Church west door in Dublin includes a horizontally sliding window, in an opening obviously recently altered (as it has a different render around it). See Crookshank and Glin, *Watercolours of Ireland*, plate 172.

[154] See Ridge, in *Dublin Builder*, vol.iii, 1861, p.694.

[155]Burke, *Philosophical Enquiry,* p.147.

[156] Taken from Craig, *Dublin*, p.256. The original quotation is in Mulvany's *Life of Gandon* (Dublin 1846), p.270. Robert Adam included a similar opinion in the Preface to his *Works*, 1773. Ironically, though Gandon worked on the Parliament House, it was Johnston, not Gandon, who filled in the windows to the front elevation in his conversion of it to a bank. See *Dublin*, p.283-4, for Johnston's works to this building.

[157] See Morrison in *Dublin Magazine*, September 1764. The distinction between house and cabin was usually observed in eighteenth-century writing; therefore it is not likely that these criticisms were directed at this lowest class of housing. Malton, *Letters*, p.15.

[158] See the *Freeman's Journal*, January 14, 1769. The author identifies himself only as L. But fashions revolve. Castletown may have received similar disparagement for its unrelieved fenestration in 1732 by Loveday (noted above), but the eminent English architect, C.R. Cockerell, on a tour of Ireland in 1825, wrote of the "excellent architecture" of Castletown, and its "most imposing front ... of that liberal and handsome style so long exploded." See Harris, in *Architectural History* 1971, p.12.

[159] Malton, *Letters,* p.14, writing about new terraces in Dame Street, Dublin.

[160] See Fitzgerald (Ed.), *The Correspondence of Emily, Duchess of Leinster*, vol. ii, p.158 (brought to the author's attention by David Griffin). Considerations such as curtains, carved ornament or painted panels above the shutter-casing would have a bearing on the size of the windows. Lady Sarah had obviously researched the size and cost involved: "I have therefore made these sketches, that you might have all the different proportions in your eye at once." The accompanying sketches show the current dimensions, and two alternatives. The costs range from £59 to £76 for four windows (it is not specified if both work and materials are included).

[161] Castle Coole drawings collection, IAA. Possibly the most interesting thing about this drawing is that is illustrates a very modest house by the standards of most designed by known architects during the third quarter of the eighteenth century, yet the proportioning was still crucial. Another drawing by the same architect in this collection further demonstrates his attention to classical proportioning with the remark, "all the windows placed here are 3' 2" wide – to regulate them as much as possible in this front and to accommodate them to the rooms no two of the piers could be made alike".

[162] McGregor, *The Picture* of Dublin, p.70-1. Deception of another sort was on the mind of the writer in the *Freeman's Journal* of August 17 1776 when he recommended "to the several Shopkeepers to place Looking Glass in convenient parts of their Shops, which would enable them to detect fraudulent practices."

[163] This tendency started much earlier in London as proven by a mention in building leases dated 1776 for Bedford Square. See Parissien, *Adam Style*, p.85. Windows were usually lengthened by the adding of a row of panes to the bottom sash, but in the case of no. 8, Merrion Square, Dublin, the window heads of the first floor were raised the equivalent of one pane, with the internal architrave awkwardly modified. The top floor windows of some houses on Henrietta Street also show signs of being raised.

[164] The Wide Streets Commission designs for Cavendish Row / Great Britain Street, Dublin are dated 1787. WSC / MAPS / 206/2. These houses were replaced in the late nineteenth century. Chambers, in his *Treatise*, p.73 (1768) criticises this ironwork, used in France in the manner of a fence, which "ought to be avoided for all the guilding and flourishing in the world cannot

make it tolerable." Atkinson and Bagenal, in *Theory and Elements of Architecture*, p.345, approve of the wrought iron balcony, calling it an "admirable tradition" in French city architecture, making a pleasing contrast with the masonry, and useful for providing access to the windows for cleaning purposes. Papworth, in his *Dictionary*, vol. viii p.55, uses the term '"balconet" from which the spelling used here is taken.

[165] The Gandon drawing is in the Fitzgerald-Kenny Album, IAA (information courtesy of David Griffin). While the drawing is not labelled as of Emsworth, the dimensions accord with those of this house. The door at Marlay House has been recently removed; it can be seen in a 1966 photograph (IAA photographic collection).

[166] Repton, *Fragments on the Theory and Practice of Landscape Gardening* (1816), p.157, is quoted in McGrath and Frost, *Glass in Architecture*, p.150. His words are given in full here to show the attention he paid to this point. "There is a circumstance relative to windows which is seldom attended to, and which has never been mentioned in books of architecture, viz., the situation of the bar, which is too apt to cross the eye, and injure the view, or landscape. This bar ought never to be more than four feet nine inches, nor less than four feet six inches from the floor, so that a person in the middle of the room may be able to see under the bar when sitting, and over it when standing; otherwise, this bar will form an unpleasing line, crossing the sight in the exact range of the horizon, and obliging the spectator to raise or stoop his head."

[167] Nicholson, in *Practical Carpentery, Joinery and Cabinetmaking*, p.80, asserts that his was the first fully technical guide on the subject, the authors of eighteenth-century guides having lacked vital experience in the field, which showed up in the inaccuracy of their writings. Although advances in joinery had already taken place, Nicholson thought that improvements could be still possible by the invention of better tools and methods. Ashpitel, in *Treatise on Architecture*, p.260, recognised Nicholson's achievements and the corresponding advances made by James Wyatt in the practice of joinery. This author was of the opinion, however, that only in sashes could improvements in nineteenth-century joinery practice be seen. As regards practice, he notes "the sooner a workman begins to think for himself the better, he ought always

to endeavour to improve on the processes of others, either so as to produce the same effect with less labour or to produce better work."

[168]Articles of Agreement for building a school at Oldcastle, 1824.

[169] Jill Kerr, senior architect, English Heritage, has emphasised (in conversation) the monetary value placed on glazed windows throughout history (and noted earlier in this chapter), which led to their survival in areas of little consequence.

[170] There is no comparative sash in Ireland, but by its chunky dimensions it is certainly from the same era as the work of Richard Castle. (Brought to the author's attention by David Griffin.)

[171] Two pairs of semi-detached houses on Pembroke Road, Dublin, are notable for their ironwork. These have been photographed by the IAA. Turner's family had a long association with the iron trade. Their Hammersmith Iron Works opened in Dublin in 1834, specialising in conservatories. See O'Brien and Guinness, *Dublin, A Grand Tour*, p.250.

[172] The mass-production of fabrics and wallpapers during the industrial revolution lessened the role of plasterwork, changing the decoration of the early Victorian interior quite considerably. For a brief outline, see *Interior Decorations and Finishes,* p.4 and p.6, *Conservation Guidelines* leaflet no. 12 of 16.

[173] Craig, in *Classic Irish Houses*, p.37, writes that "in the best work (this fan) is shaped like a segment of a hollow cone." Charles Brooking has several examples from Ireland – he considers that they are a wholly Irish detail.

[174] See Pocock, *Modern Finishings for Rooms*, p.15 and plates M5 and M6.

[175] The cost of making and glazing arched windows was always higher due to the extra work involved. Glaziers charged for the square footage of the square dimension of the whole opening, the extra excused by the wastage caused by cutting curves. As the owner of a substantial joinery works in London, James Wyatt – after whom the window was named – would have been well aware of the savings arising from the omission of the intricate round arch. The information on Wyatt's joinery is taken from Nicholson, *Practical Carpentry, Joinery and Cabinetmaking*, p.82.

[176] See Frank Mitchell, in *IGSB*, 1987, pp.17-18. The Balfours were partial to Wyatt windows.

[177] Cooper does not refer anywhere else in his writings to leaded windows. See Austin Cooper, *Diaries,* p.52 and NLI Ms 772.

[178] The Minutes recorded a statement in 1777 that the transom windows were "inconsistent with the health of the soldiers" (which is interesting, as most had already been changed). See RHK *Minutes*, March 5, 1777; the comment was made by the architect, Thomas Cooley.

[179] Fingall papers, NLI Ms 8036 (3): Thomas Wilkinson's bill (plumber), 1789-90; March 8: "to 2 (qrs) Glaziers Lead for Killeen Castle". Until 1802 Killeen Castle was a fourteenth-century keep. A little-known late eighteenth-century drawing by James Malton entitled 'Brewery in Ireland', shows a castle turret with quarry lights which appear to be leaded. See 'Art Forum', by John Fitzmaurice Mills, in *The Irish Times*, 31 Oct 1967. (The picture is shown courtesy of the Fine Arts Society, London.) As seen in his well-known prints of Dublin, Malton delineates sashes very exactly, and his details in these tower windows may be believed.

[180] The *Belfast Newsletter* of Jan 4 – 7 1785 contains the notice by Sam. Gibson that he had landed from Bristol a parcel of Crown and Quarry window glass. One of the first advertisements placed by Smylie and Co. of Belfast notes that glass could be sold cut into squares and quarries. See the *Belfast Newsletter*, March 13 1788.

[181] The works at Galgorm Castle were commented upon in the *Dublin Penny Journal*, 28 June 1834. "The good taste of the Peer is evinced, by having, in the alterations, no change of appearance made ... but for the windows, which are not now of small diamond shaped panes, set in lead and strongly staunchioned with iron." Quoted in Charles Brett, *The Buildings of Antrim*, no. 67. Myrtle Grove was visited by the Rev. Samuel Hayman, who mentioned that the old glazing had been removed. See Hayman, in *JRSAI* 1856, pp.25-28.

[182] For a detailed inquiry into Irish stained glass artists of this century, see Wynne, in Moore (Ed.), *Crown in Glory*, pp.58-68. Austin Cooper noted that he saw stained glass windows at Rathfarnham by Jervais, but early this century F. E. Ball wrote that the windows had gone. See Cooper's note book, NLI, ms 772(2), f.41. Ball, in *History of the County Dublin*, pp.140-2, states that the Hall had been lit by three windows of stained glass "which have disappeared." The lights which are now in this position (which are convincingly eighteenth century, and of a

very high quality) were later releaded into patterned surrounds which detract from the artistry of the floral detail.

[183] Occasional references such as that by Cooper are found. Similarly, the lost stained glass of mediaeval Ireland is very rarely chronicled. An exceptional surviving three-light window of the 1790s is at Clonegam, Co. Waterford, in Lord Waterford's private chapel. It is signed by Richard Hand and dated 1793. This is, however, in alarming condition, and many panes are completely gone. The Dublin Society bought a window from Hand in this same year. Three years previously they had exhibited a "very fine painted glass window" by Hand in their Museum and published both a method of guilding on glass used by him and a recipe for spirit varnish in the Society's *Transactions*. Despite this patronage he emigrated to London, dying there after a successful career *c.*1816. See Meenan and Clarke, *The Royal Dublin Society*, p.280.

[184] See Strickland, *Biographical Dictionary of Irish Artists*, vol i, pp.534-5, or Wynne, in *Crown in Glory*. For the petition of 17 January 1760, see NLI Ms 24396 (Westropp papers). Jervais was still in Dublin in May 1770, when he advertised the exhibition of one of his windows in Mr Napper's Rooms in Great George's Street, charging sixpence admission. See the *Dublin Journal*, May 1 1770.

[185] Barons Court was enlarged and embellished with a rich neo-classical interior early in the nineteenth century by Morrison. The skylight and the drawing were photographed by *Country Life* in 1979 (copies in IAA).

[186] Christopher Salmond, English glass-factor, is of the opinion that the margin light developed in answer to the early sheets of cylinder glass being of an insufficient size to glaze the full of an average sash. However, Calloway in *Elements of Style*, p.178, states that margin glazing dates from about 1815. No Irish examples are known at such an early date.

[187] See *The Irish Builder*, Feb 8, 1851, p91 for a resume of the work and illustration.

[188] See Craig, *Dublin*, p.305. See O'Brien and Guinness *Dublin, A Grand Tour,* p200 for an illustration of the Kildare Street Club.

[189] The architect Hugh Kelly signed and dated the drawing, March 16 1859. McCurdy and Mitchell Collection, IAA. The building still stands, but now with uPVC windows.

[190] New processes were considered especially suitable to modern building types such as railway stations. The train sheds to the rear of Heuston Station were erected in 1846 independently of the station. The designer was the railway company's engineer John B. McNeill.

[191] Inventions and innovations in the field of window performance and design continued apace during the latter half of the nineteenth century, but these crossed the boundary from handcraft to mass production, and so are of less interest to this particular study. Just two are noted, from the catalogue *The Irish Industrial Exhibition 1853*, edited by Sproule, to illustrate the contemporary ingenuity for adaptation and invention. Mr I. Farrell, Fleet Street, Dublin, showed his 'Albert Window', an improved model of a French window, and the Rev. J. Graves and Mr J. Lalor M.D., Kilkenny, (on behalf of the Literary and Scientific Institution of Kilkenny) exhibited their models of a new French window sash.

CHAPTER TWO

[1] Neve, *City and Country Purchaser*, p.146-7.

[2] See Barker, *Glassmakers*, p.58. From Customs, Treasury and Excise Papers, 27 Jan 1758 (Crown and Green Glass. Customs 48 / 16, 125 and 423).

[3] McGrath and Frost, in *Glass in Architecture*, p.12, speculate on the transfer of knowledge of spun glass techniques from Syria via Venice to Normandy glassmakers. Spun discs called 'specula' are known to have been made very early in Syria.

[4] See Chance, in Powell (Ed.), *The Principles of Glassmaking*, pp.123-5. The weight of the glass was about half the weight of the blowpipe, which itself weighed about twenty-five pounds. The last record of crown glass in Ireland dates from the early twentieth century, in the *Report on the Trade in Imports and Exports at Irish Ports*, 1915, p.104. Cylinder, crown and "common" window glass was imported from the USA. Just four years previously T. H. Bishop, the glazing contributor to Middleton's *Modern Buildings* mentioned that crown glass was in very little demand (vol.2, p.180).

[5] Powys, *The Repair of Ancient Buildings*, p.164.

[6] Edwin Gunn, *Little Things that Matter to Those Who Build* (2nd ed., revised, 1925), p.80 (this quotation was given to the author by David Griffin). McGrath and Frost, in *Glass in Architecture*, p.117, note that sheet glass can also cause the same problem and recite a case in which a nineteenth-century gardener found that the irregular scorching of his plants was due to the variations in thickness in sheet glass, the thicker areas being the "cockles" incident on the flattening of the cylinder; "some of them formed lenses of considerable power, dependent for their injuriousness on whether the plants came within their focus".

[7] Chance, in Powell (Ed.), *Principles of Glassmaking*, p.126.

[8] See Chance, in Powell (Ed.), *Principles of Glassmaking*, pp.126-7, 130. The measurements were taken from the number of ounces per square foot; 15, 21, 32, 36, 42 were standard. The average size of 15oz and 21oz weight was 48 inches by 34 or 36 inches. Sheets as large as 82 inches by 42 or 75 inches by 50 were made without mechanical assistance. See Douglas and Frank, *A History of Glassmaking*, p.33-4 on tax. There was a tax rebate on the selling of cut panes due to the wastage in cutting panes from the crown. This rebate applied also to cylinders, although much less wastage occurred. This was one of the principal reasons that the English firm Chance Brothers invested in the skills and equipment requisite for cylinder glass so as to gain the unfair advantage obtained by the cylinder maker from excise drawback allowances.

[9] Chance, in Powell (Ed.), *Principles of Glassmaking*, p.130.

[10] The *Builder* 14 April 1860, p.238, quoted by Louw, in *Construction History*, 1991, p.58.

[11] Chance, in Powell (Ed.), *Principles of Glassmaking*, p.129. In the warehouse the best sheets of the thicker cylinders were selected for grinding and polishing by machinery. See also Barker, *Glassmakers*, p.63. McGrath and Frost, in *Glass in Architecture*, p.26, quote this much of the text of the patent, and add, "this new patent plate supplied an immediate want. It was exactly what was wanted for coach windows, paintings and engravings, ornamental mirrors and later for photographic plates." Patent plate had the same drawback as cylinder sheet, namely the limitation upon size arising from the process of manufacture. By the early twentieth century it was available in sheets of up to just fifty inches by thirty-nine (or thirteen feet in area). See T. H. Bishop, in Middleton, *Modern Buildings*, vol. 2, p.180.

[12] A eighteenth-century description summarises the process for making plate glass after the French method "that is by rolling while hot with a brass cylinder, by which sheets of any size can be made" in *Dublin Journal*, 23 September 1783.

[13] See McGrath and Frost, *Glass in Architecture*, pp.14-6 on the expense and skill involved in producing plate glass.

[14] Graham Harris, 'On the Manufacture of Plate Glass', in Powell (Ed.), *Principles of Glassmaking*, p.141. The seventeenth-century costs given by McGrath and Frost, p.14, are scarcely believable.

[15] Barker, in *Glassmakers*, pp.18-20, gives an insight into the difficulties encountered in the process. He states that managerial incompetence combined with the difficulty of manufacture to result in two out of every three plates being waste. It was over twenty years before the process was made competitive, with a level of 100% wastage considered acceptable.

[16] Barker, in *Glassmakers*, p.20, mentions that the steam engine was introduced into the British Plate Glass Company in 1789. See Polak, *Glass*, p.167 for information on silvering. In 1835 a more convenient method of silvering plate glass was patented which avoided the use of mercury (previously necessary for the adhesion of metal to the rear of the glass). This was commercially viable by about 1840. The inventor was a German scientist, Justus von Liebig.

[17] Coach windows were glazed with plate glass from the seventeenth century. The earliest reference found dates to 1683. See NLI Ms 2520, Ormond Papers, accounts of Brigham, coachmaker; "for four glasses diamond ground, and frames, and lachering [laquering] them, £6. – " (damaged). Diamond bevelling is only carried out on plate glass. According to F. E. Dixon, in "Vanished Industries of Dublin" (Old Dublin Society, talk given 14 July 1970) one eighteenth-century coachmaker, John Carpenter of Camden Street, Dublin, sold as his speciality carriages with windows having half-inch plate glass to eliminate rattling.

[18] Christopher Salmond, English glass factor, is of the opinion that many of the panes to the reception rooms at Castletown are plate glass (probably French), but extensive examination of the accounts of this house has failed to corroborate this. An early nineteenth-century statement to a parliamentary inquiry suggests that plate glass was rarely used even though the tariffs had

been reduced somewhat. "With respect to Plate Glass, from the small demand for the article, I found some difficulty in procuring satisfactory information", wrote the Secretary Customs, Ireland, in 1823. See the *Twelfth Report of Commissioners of Inquiry into Revenue Arising in Ireland*, 1825, Appendix no. 130 (p.766). The Appendix contains a list of prices from the British Plate Glass Company and another from a Dublin retailer, Joshua Kearney.

[19] See M. Eldridge, 'The Plate Glass Shopfront', in *Architectural Review*, Mar 1949, pp.193-6, who quotes from the *Builder*. Around this date, plate glass sizes of seven to eight feet high by three to four feet across were becoming common in London shopfronts.

[20] The value of the plate glass imported into Ireland from England in the years 1810 to 1825 varied erratically, from 5,543 square feet (1821) to 59,859 (1815), while the value of flint glass increased steadily. The figures appear to reflect more the overall quantity of exported plate than Irish consumption, as the overall export figures are similarly erratic. See the *Twelfth Report of the Commissioners of Inquiry into the Revenue*, 1825, p.760.

[21] See Fitzgerald, (Ed.), *The Correspondence of Emily, Duchess of Leinster*, vol. iii, p.112. Lady Louisa must have paid a fortune for her four mirrors. In 1794 the British Plate Glass works in Ravenhead charged, for their largest size of plate, 75" by 117", £404.12.0. The mirrors Lady Louisa bought (each approximately 65" by 100") would have included the price of the silvering and also were subject to the then excise duty for French glass (12% in the 1780s). The source of the Ravenhead price is given by Louw in *Construction History*, 1991, p.53. The previous decade, in 1767-8, Thomas Jackson (of Capel Street, but likely to be from the same family as the mirror-sellers in Essex Bridge) was paid £261.1.8 by Louisa Conolly for pier glasses for the drawing room. See Moore, in *New Perspectives*, p.129, from TCD Ms 3964.

[22] Powell, in *Principles of Glassmaking*, p.102, states that sand with less than half of a percent of oxide of iron is sufficiently pure for ordinary window glass.

[23] Westropp, *Irish Glass*, p.162. In a 1993 lecture to the Glass Society of Ireland by Dr David Watts 'From Sand Ashes to Waterford Blue', the author explains how colour is dependent on oxidisation of metals, determined by the balance between oxygen and unburnt carbon in the

furnace. Plant ash contains manganese, but the temperature of the furnace was rarely high enough to impart purple from the manganese into the glass.

[24] Stated by Chance, in *Principles of Glassmaking*, p.132. See also Marson, *Glass and Glass Manufacture*, for a detailed chemical analysis of glass types, and also McGrath and Frost, *Glass in Architecture*, p.98.

[25] See Barker, *Glassmakers*, pp.45-47. The remark about CC glass is taken from Chance Brothers Minutes, 19 September 1828 [PA ZZ 45/8. Minutes, 1827-46]. Barker, p.47: "The inferior quality of glass which was disposed of in Ireland was sold much more cheaply." Stitt, in *Practical Architect's Ready Assistant*, table cviii, labels the "Scotch" (Dumbarton) glass as A - C. In 1824 the Royal Hospital made it a condition of tendering for the glazing contract to use *B* and *C* glass. See RHK 1/1/13, f.104; the Governors "ordered that Public advertisement be made ... "the glass to be proposed for by the foot the quality of which is to be stated". In 1840 a glazier George Lewis wrote in a letter for the contract that he would put in "panes of glass ... of superior quality, marked B: ...[and] put in (inferior quality) ... marked C:" RHK 1/1/15 f.341. No mention is found of fourths or CC glass in any account.

[26] Peter Francis very kindly has given this author two thick bullion panes cut as quarries, of a very green appearance and a high proportion of bubbles. The provenance of these panes is unknown. They compare very poorly with surviving bullions from Smylie's glasshouse of Belfast, which are thin and of a clear colour, and cut on the square. See *Minutes of the Evidence Taken Before a Committee of the House of Lords*, 1785, p.264, for the statement of James Keir.

[27] See Barker, Glassmakers, pp.12-3, the categories given are from *The Plate Glass Book*, written by a Glasshouse Clerk, 1757, xxiv.

[28] McGrath and Frost, *Glass in Architecture*, p.27 record the percentages necessary for durability. There should be not more than 15% soda and not less than 10% lime and magnesia taken together.

[29] Polak, in *Glass*, p.200, lists these considerations.

[30] In 1685 a crib of Dutch glass cost its importer £1.5.0 in April, whereas another crib (which may have had a different provenance, or been of a superior quality) cost £1.18.0 in July. See

NLI Ms 3107, Merchant's account book, 1684-88. The fashion for French glass seen in the early eighteenth-century Trinity accounts showed disregard of the inflated cost (due to the war with France), where the Provost at least was not inclined to skimp on the glazing in his lodgings. A large square cost around 16d, compared to 6d for a comparable English glass square for a sash-window. (TCD P2/8/12, 1699/1700).

[31] *Faulkner's Dublin Journal*, 22-25 March 1745/6.

[32] Broad glass was sold in 1785 in England for about 65 or 70 shillings the case, of which the duty paid on it amounted to about 30 shillings. See *Minutes of the Evidence Taken Before a Committee of the House of Lords*, 1785, p.269, statement of James Keir.

[33] RHK *Minutes* for 1828 note a memorial from the contract glazier, undersigned by two merchants, to the effect that the price had risen by 8d per foot since the previous April, amounting to about double the previous cost. RHK 1/1/13, f.473. The Cork Trades Association, in a petition to both houses of Parliament in 1835, stated that window-glass was now £5.10.0 per crate. See Westropp, *Irish Glass*, p.212 and Appendix Three.

[34] See Louw, in *Construction History*, 1991, p.67; this price is taken from Henry Chance, 'On the Manufacture of Plate, Crown and Sheet Glass', in Samuel Timmins, (Ed.), *The Resources, Products and Industrial History of Birmingham and the Midland Hardware District* (1866), p.149. See Barker, *Glassmakers*, p.47 for the prices of the crates sent to Ireland under these agreements, of what he termed inferior quality. The best quality cost £4.10.0, the worst £2.10.0.

[35] See the *Thirteenth Report of the Commissioners of Excise Inquiry*, 1835, pp.26-7 for details of exposed frauds. A committee of 1823 had found that window glass originally exported to Ireland from Scotland was clandestinely re-imported, undercutting the licenced glasshouses. See the *Twelfth Report of the Commissioners of Inquiry into the Revenue Arising in Ireland*, 1825, pp.756 and 774-6, wherein a Scottish glassmaker, Hugh McRuer, detailed that it was being carried on openly, with the smugglers calling to glaziers and builders to take their orders. The volume was great: between January and April 1825 nearly 7,000 lb of smuggled glass was sold at the Revenue offices in Greenock and Glasgow.

[36] Glass used in Ireland was imported from England, France, Holland, Belgium, Germany, Norway and what are quaintly termed "the East Countries" in the early Customs records. See PRO Kew Cust 15. Returns for the years 1682-6 are listed in BM Add Ms 4759, in which England, Scotland, France and Flanders, Holland and Denmark are mentioned. The customs books for the period 1764 to 1823 are in the National Library of Ireland. In the mid- and late nineteenth-century American and Belgian glass-works exported vast quantities of cylinder sheet glass to countries including Ireland.

[37] The experience of a Belfast merchant who tried to sell glass in 1679 has been noted in Chapter One, which highlights the low ebb of provincial economies at the time. The *Commons Journal* of May 29, 1759 notes the saving from a storm by Dun Laoghaire Pier of a ship, the *Betty* of Newry, carrying glass, cider and bark. See *JIHC* vol. vii, 1761-64.

[38] A three year import average is usually given in official records. The quantity of glass sheets in these bulk measures varied at times. The figures are of the total imports into the whole island. 1682: 385 cribs (BM 4759); 1698: 1340 cribs (including webbs) (PRO Cust 15); 1708/9: 902 and 1/2 cribs, and 58 and2/3 webbs (Westropp, *Irish Glass*, p.142); 1740: 1455 cases (*JIHC* vol. ix); 1773: 2394 cases; 1783: 2067 and 2/3 cases (Sheffield, *Observations on the Trade of Ireland*, 1785). Imports from Dumbarton in the 1790s show that very large quantities were landed at Dublin especially, such as the 194,620 lb noted in 1794, at a time of great expansion in the capital. See Cochrane, *Scottish Trade with Ireland in the eighteenth Century*, pp.68 and 153-4.

[39] The Conolly Papers, IAA, show the details of glaziers' bills at Castletown, Co. Kildare, including days spent removing glass panes for re-use.

[40] See Neve, *City and Country Purchaser*, p.154. There were specific sizes of quarry, with the usual sort being termed 12s, meaning that 12 quarries of 12s made a square foot of glass, 8 quarries of 8s and so on. Sizes ranged from 8s to 20s. There were two main types of quarry: square and long, the acute angle of the square quarry being 77. 19', and of the long quarry being 67. 22'. See Wilson, in *Building Early America*, p.155 for an illustration (reproduced in Diagram 6).

[41] Quoted by Louw, in *Architectural History,* 1983, p.64, from PRO Works, 5/19, referring to Princess Mary's closet at St. James' Palace, London.

[42] *JIHC* vol. v, 1749 - 56, appendix lxxiv. See Chapter Three for a detailed discussion on window-pane sizes.

[43] According to a more modern source a square foot of glass weighed about three pounds; see Lawlor, in *JRSAI*, 1923, p.40: in the late fourteenth-century 600lb of glass was bought for the chapel at Dublin Castle. In response to an inquiry from Lawlor, the then clerk of works at York Minster estimated the measurement of this glass at 200 square feet. Archaic terms are given by Blair and Ramsay, in *English Medieval Industries*, p.266, and summarised as follows: glass was usually priced by weight in the fourteenth and fifteenth centuries; a wey or ponder weighed about 5lb. 24 weys comprised a seam or hundred. In the late fifteenth and sixteenth centuries new terms appeared, such as wawe, sheaf, wisp, case and cradle. The wisp corresponded to the wey and the case and cradle were the same as the seam. The sheaf seems to have weighed 6lb and the wawe comprised 60 sheaves. Papworth, *Dictionary of Architecture* in the 'glazing' entry lists a number of archaic terms and the quantities of broad or crown glass that they represented. A crib was generally a hundredweight of glass or about 150 square feet, though could be substantially more; 220 - 240 sq. ft. is given in Smith, (Ed.) *Herbert Correspondence* [explanatory note to letter 264], relating to late seventeenth-century measures. Naturally the thinness of the panes dictated the amount of glass per pound weight. A general measure cannot be estimated. Neve, in *The City and Country Purchaser*, quotes a Mr Leybourn, presumably a glazier or glassmaker, as giving a measure of nine feet a weight of about 8lb. There were 45 tables of Newcastle (white) glass to the case, measuring about 210 square feet, according to Neve, in *City and Country Purchaser*. An earlier figure of 24 pieces per basket is given by a French source, referring to Normandy [crown] glass. Each piece of Normandy glass measured about 27 or 28 inches in diameter. See Savot, *L'Architecture Francoise des bastimens particuliers* (Paris 1624), quoted in Thornton, *Seventeenth Century Interior Decoration*, endnote 95. Rhenish broad glass was imported (and presumably sold) by the 'way or web'. This was a measure containing 60 bunches, each bunch having 6 plates of about 2 feet square. The Customs

records give it in bunches of 100, the usual price at the end of the seventeenth century being £5. Measures for Rhenish glass are given in *JIHC*, vol. 14, 1790-91: appendix cliii - cliv. This glass suffered £3 custom and £3 excise per webb at this date. The most obscure type of glass, only known from its inclusion in the Excise/revenue details of the early eighteenth century is Muscovy Glass, which was sold by the pound. See PRO Kew Cust 15.

[44]Aheron, in his *General Treatise* ('dictionary'), mentions 24 tables, each being about three and a half (or two-third) feet diameter. Papworth, *Dictionary of Architecture*, under 'Glass' states that the crown was cut into unequal measures, the larger one (including the bullseye) termed the table, the smaller the slab. *The New Practical Builder* information only applies to some places, as Barker, in *Glassmakers*, p.47, notes that other than for London, Scotland and the north-west the crates were packed with twelve tables, whatever the quality, though more could be put into inferior crates if the purchaser requested it.

[45] See Stitt, *The Practical Architect's Ready Assistant*, table cviii, p.340. Even worse for the client, Stitt notes that "these prices will be found to fluctuate very much, as there are no regular stationary prices".

[46] There is some evidence that Jervais and other stained glass artists collaborated with chemists to produce coloured glass in Ireland in the eighteenth century. This would have been made on a very small scale, as noted in Chapter One. The Dublin Society ordered in 1760 that Jervais be aided in the preparation of a furnace and materials, and Strickland notes that Jervais was assisted in his chemical studies by a Dr Cunningham, but the likelihood that he produced sheets of glass is very slim. It is more probable that either enamels or other stains were manufactured for clear glass, rather than the blowing of coloured crowns, and that sheets of pure colour were imported. See NLI Ms 24936, Westropp papers, petition of Jervais, January 17, 1760, and Strickland, *Dictionary of Irish Artists*, vol. 1, p.543-5.

[47] All of the glasshouses mentioned in the text are listed in Appendix Two, *An Inventory of Window-glass-houses, c.1580 – 1850*. The standard work of reference on the history of Irish glass and glasshouses is Westropp, *Irish Glass, The History of Glassmaking in Ireland from the Sixteenth Century*. The page numbers referred to in the endnote text are of the 1978 revision,

edited by Boydell. The following historical account is taken from this and a small number of other sources, including Westropp's own papers, NLI Ms 24936. These contain other pieces of information from contemporary sources and personal correspondence. The author is grateful to Mary Boydell for access to her own files. Some general texts on Irish history provide comment on the glass industry. These include Wallace, *An Essay on the Manufactures of Ireland*, Newenham, *View of the Natural, Political and Commercial Circumstances of Ireland,* Murray, *History of the Commercial and Financial Relations between England and Ireland from the Period of the Restoration,* and Longfield, *Anglo-Irish Trade in the Sixteenth Century.*

[48]Westropp, in *Irish Glass*, pp.20 - 24, transcribes the suits and letters which relate to plans to set up glasshouses in Ireland from about 1585. Captain Woodhouse made suit for the privilege, and also assisted George Longe and Ralph Pillyng to erect and maintain two glasshouses, from 1586-88. Woodhouse appears to have sold his patent to George Longe by 1589. This information is taken from the Calendar of State Papers, Ireland, the Patent and Close Rolls, Ireland, and the Lansdowne Manuscripts.

[49] A further set of social reasons are given by Polak, in *Glass*, p.25. Glassmakers may have been tempted by agents to move for reasons of money or adventure to where they were considered something out of the ordinary. There was also a better chance of reaching a higher grade of skill than at home where competition was intense.

[50] Westropp, *Irish Glass*, p.23. Petition of George Longe, 1589.

[51] Quoted in Thorpe, *History of English and Irish Glass*, p.270, without attribution.

[52] In 1591 a ship's cargo was recorded: "the *John* of Padstow .. John Luynt master from Youghall. George Longe Iglishe Merchant dothe enter in the same, six chestes and a half of Bourgony glasse." Quoted by Longfield, in *Anglo-Irish Trade*, p.126; from the Padstow Port Book, 1591 (KRPB 1017/6 2nd Sept). The 1597 petition is in the Manuscripts of the Marquis of Salisbury. See Westropp, *Irish Glass*, pp.23-4.

[53] It has been presumed until very recently that this glasshouse had operated from Salterstown for the production of glass for the English market, but unpublished research by Peter Francis has shown that the surviving records actually relate to another location (probably in Co. Cork). This

now means that only one reference to the Salterstown glasshouse is known, that of Nicholas Pynnar, an Elizabethan official who visited in 1619 and pronounced the buildings to be in decay (see Hill, *Plantation in Ulster*, p.588). As information on this manufactory is not yet forthcoming, no entry has been made in Appendix Two.

[54] The exact location of this glasshouse is not known, but it was probably adjacent to Lismore, where Boyle lived, as is shown by the references given in Grosart (Ed.), *The Lismore Papers*, vol. 1. Boyle's personal diaries contain notes on delivering bills of exchange (and other communications) between himself, Hawys, Holloway, Leech and others. Godfrey, in *English Glassmaking*, pp.66-7, 86-7 lists the court records that relate to this glasshouse. Thomas Leech, a London merchant sold the glass for Boyle (*Lismore Papers*, vol. 1, pp. 50, 53-4, 63). This merchant had a large consigment of glass confiscated in 1616, over which he sued. See Godfrey, *English Glassmaking*, p.86.

[55] See Marsh's Library, Dublin. Ms z3.1.31. This is reproduced in full in *Irish Glass*. A manuscript copy by Westropp is included in his own papers, NLI Ms 24936.

[56] O'Brien, (Ed.), *Advertisements for Ireland*, p.37. As the author referred to industry in the heart of the country, there is a slight possibility that he was writing about the Birr glasshouse (discussed below), but this would hardly have been in production in the same year – 1623 – as the workmen arrived.

[57] See Westropp, *Irish Glass*, p.30-1, Cooke, T. L., *The Early History of Birr* (Dublin 1875), pp.41-3, 323-4, and Boate, G., *Ireland's Naturall History,* p.162. It should be noted that Boate phrased his comment in the past tense.

[58] Westropp, *Irish Glass*, p.32, and Cooke, *History of Birr*, pp.41-3, 323-4. Bigo's will is dated 1664. Remains of a glasshouse near Banagher were partially excavated in the early 1970s, in which brick kilns are visible. Vessels were made at this glasshouse, as shown from excavated fragments (found by Mary Boydell).

[59] Sir Robert Mansell, quoted by Godfrey, in *English Glassmaking*, pp.127-8.

[60] Westropp concludes that little attention was paid to the ban if Perceval, of Burton, Co. Cork seriously considered procuring a licence less than a year later. See the *Egmont Papers*, vol. 1,

p.118, Thomas Bettesworth to Perceval, writing from Mallow, Co. Cork, in 1640. The quotation is reproduced in *Irish Glass*, p.32.

[61] Sir George Rawdon to Viscount Conway and Killulta, writing from Lisburn, Co. Antrim, 4 July 1665. See *CSPI*, 1665. A later letter (September 3, 1665) from Rawdon states that Conway had mentioned Glenavy for the glasswork, but as no other evidence of a manufactory has been found, it is not known if this went ahead. Rawdon disputed the projected cost of £15 per week, thinking it insufficient. See also Westropp, *Irish Glass*, p.33.

[62] Several conical brick glasshouses collapsed with fatalities during the seventeenth and eighteenth centuries. In Dublin in the 1690s Captain Roche's [flint-glass] glasshouse chimney came down, causing several deaths. Entries in the St. Michan's Parish registers for March 1696/7 list seven persons burnt to death or killed by the fall of the glasshouse. See Westropp, *Irish Glass*, p.39. A glasshouse fell down in the course of construction near Marlborough Green, Dublin, in 1755, as noted in *Pue's Occurrences*, October 28, 1755. In 1777 a new glasshouse at Martins Lane, Marlborough Street, Dublin, caused eight fatalities when it fell down upon the removal of the scaffolding. See *Irish Glass*, p.59.

[63] Westropp, *Irish Glass*, pp.33-6, prints the letters in full. (See *CSPI* 1670, letter of Robert Leigh to Secretary Arlington.) The name Glasshouse is given to a townland near Portarlington (at which shards of glass and remnants of brick structures remain). This enterprise had failed by 1691, according to research carried out by Raymond Hylton (see Hylton's The Hugenot Settlement at Portarlington, 1792-1711, MA thesis, University College Dublin 1982, p.5, quoted in Caldicott et al, *The Hugenots and Ireland*). As this is the only known glasshouse that may have been manufacturing at this time, the export form Dublin of window-glass to the English plantations in 1683 (a quantity of 590 feet is recorded in the Returns) may be linked hesitantly with Henzy. See BM 4759, 24 Dec 1682 - 24 Dec 1683. (Information courtesy of Peter Francis.)

[64] The difficulties associated with trials of materials did not end in the seventeenth century. Westropp observes that although fireclay was usually imported, several Irish glasshouses found local supplies, and notes that in 1785 a Bristol crown and bottle manufacturer stated that he obtained most of the materials for his glass in Ireland and George Minty, an English glassmaker,

got a premium from the Dublin Society in 1758, to aid his trials in obtaining good fireclay in the coalfields of Kilkenny. See *Irish Glass*, p.171.

[65] This glasshouse made flint vessels, according to Dunton. See Gilbert Library, Ms 189, f.99. A map of Dublin of 1673 shows a glasshouse on the northern boundary of Trinity College at Lazar's Hill. A patent was granted to Sir Philip Lloyd, Richard Hunt and John Odacio Formica for their crystalline (flint) glass in 1675. The manufactory of the Lloyd-Hunt glasshouse appears from this map to have been located in the Lazar's Hill - Ringsend area. See Westropp papers, NLI MS 24936, sourced from the *Calendar of State Papers, Domestic*, May 29, 1675. Thomas Dineley left a blank page in his manuscript description of Ireland, with the tantalising heading 'Glassehouse'. This work is dated *c.*1675 - 81. See Dineley, NLI Ms 392, f.57.

[66] Newenham, *Natural, Politial and Commercial Circumstances,* p.104; Murray, *Commerical and Financial Relations*, p.80.

[67] This act is titled 19 Geo II. C12, s14. A duty of 9s 4d was placed on every hundredweight of materials for crown, plate, flint and all white glass made in Great Britain. Only British glass was allowed into Ireland, and no Irish was to be exported under penalty of 10 shillings for every pound weight exported. The more favourable conditions for Irish manufacture after 1746, however, did not prevent proprietors from regularly petitioning both Parliament and the Dublin Society for aid. See The *Journals of the Irish House of Commons*, Meenan and Clarke, *The Royal Dublin Society*, p.250, and NLI Ms 24936 (Westropp).

[68] See Polack, Glass, p.160.

[69] Westropp, *Irish Glass*, p.45 and p.206-7; this venture was connected with Hugh Boyd, a name which recurs at Ballycastle, Co. Antrim (see Inventory, pp.242-3). In 1725 the Deputy Vice Treasurer of Ireland, John Pratt, is said to have set up a bottle glass works, which may have been this manufactory. See NLI Ms 24936 (Westropp). Thomas Prior may have been referring to Bachelor's Quay when he wrote "the Gentlemen who have set up the making of Glass-Bottles among us have done real service to their country, and 'tis hoped that they will be encouraged to proceed to the making of all sorts of Glass-Ware". See Prior, *List of the Absentees of Ireland,* p.22-3.

[70] Westropp, in *Irish Glass*, p.46-7, prints a *Dublin Journal* advertisment of May 1767 noting that this works sold: "very good crown window glass and ... blended window glass". (The term 'blended', unknown elsewhere, may refer to broad glass.) William Deane, one of the proprietors of the glasshouse was listed as a glass manufacturer at this address in Dublin directories until his death in 1793. The site had first two (amalgated) glasshouses, until 1759 when it was split, and Deane retained the Round Glasshouse.

[71] Three advertisements chart the progress of this glasshouse: The *Dublin Journal,* May 24, 1729 records their selling flint glass, vials, etc. The same newspaper of November 2, 1731 remarks that soon there will be made the best London crown. On February 5, 1740 the *Dublin Journal* notes that the glasshouse is to be let and is disposing of materials.

[72] *The British Mercury* of 11-15 June 1711 informs prospective workmen to apply to Mr James Fitzgerald in London for jobs in the "glasswork for making crown glass and plate carrying on in Waterford.." See Westropp, *Irish Glass*, p.209. It is likely that the same furnace and chimney would have been used for Head's factory to save on construction costs, unless it had been demolished in the interim.

[73]Thomas Jeudwin Smith, John Landon and Henry Lunn were the manufacturers who commenced in 1759. They also produced flint glass. The Round glasshouse, Abbey Street / Bachelor's Walk is not to be confused with the (flint glass) Round Glasshouse in St. Michan's parish. This confusion arises due to the plan of glasshouse buildings, which at this time were tall conical structures.

[74]*JIHC*, vol. vii (1761-64), appendix lv. In a petition of Lunn, Jeudwin Smith and Landon, Henry Lunn was brought before the Parliamentary commission. One of his arguments was that the Surveyor General had said that he preferred their crown to Bristol crown and would encourage it. Lunn is listed in the *Dublin Directory* at Abbey Street from 1784-91. He was at 3-5 North Strand in 1792, as a glassmaker, when a glasshouse, two lime kilns and workshops were valued. See P.R.O 402 Chancery, 1799; this information from Mary Boydell. Charles Mulvany, glassmaker, took over this site, and in 1801 advertised that one of the furnaces was being adapted to produce window-glass. See Westropp, *Irish Glass*, p.55.

[75] Westropp, *Irish Glass*, pp.133 - 136. On page 135 Westropp notes that although in the early advertisements that they stated an intention to make window-glass, apparently nothing but bottles was ever manufactured. (*Irish Glass*, p.209.) However, a preliminary investigation of the site carried out in 1974 revealed that crown glass was produced here. A copy of an unpublished excavation report by G. Bowie, *Preliminary Report, Ballycastle Glass Kiln Excavation*, dated 9 March 1974 is in the possession of Peter Francis, who showed it to the author.

[76] The advertisement of 1773 is transcribed in Westropp, *Irish Glass*, p.57-8.

[77] See Westropp, *Irish Glass*, pp.57-61, and NLI Ms 24936. The Dublin Society granted Richard Williams' manufactory premiums for plate glass valued at £446 in 1787-8, and for plate valued at £1000 in 1788-89.

[78] See the *Dublin Chronicle*, October 4, 1787, reprinted in *Irish Glass*, pp.61-2. This may or may not have had a connection with a 1783 advertisement in the *Dublin Journal* (September 23) mentioning that an "artist from England" intended to set up a plate looking-glass business after the French method of casting the glass (reproduced in *Irish Glass,* p.62). An advertisement in the *Hibernian Journal*, October 34, 1798 noting the dissolution of the Chebsey partnership does not mention plate glass. See Appendix Two.

[79] The business of mirror-making is touched upon in Appendix Three.

[80] An advertisement in the *Belfast Newlsetter*, Feb. 26, 1788 notes that the company has window glass ready for sale. Another advertisment of the following month states that it is of "an exceeding good Quality" with "a second sort" also available. See also Westropp, *Irish Glass*, pp.103-9 for a history of the business. An advertisement of March 2, 1789 in the same paper, noted that their crown glass was now "superior in every respect to any imported form Bristol" (one of the most sought-after glasses). From 1787 to 1794 the value of the window glass made annually by Smylie and Co. varied between £1377 and £9512. Good quality glass sold for 44 shillings per side, and second quality for 42 shillings. It appears that this business went out of production in 1797 from an advertisement concerning the selling off of materials (*Belfast Newsletter*, April 28, 1797). Westropp conjectures that window-glass advertised in the *Belfast Newsletter* in 1801 by a rival firm, Benjamin Edwards' flint and bottle glasshouse, may not have

been the product of this particular manufactory as he notes that no other reference is made to crown glass by Edwards. This states merely that "also first, second and third window glass" was also sold. See *Irish Glass*, p.103. Westropp on p.105 notes that Edwards took over Smylie's concern in 1824, but in all probability he used it to manufacture flint glass. The advertisement that offered the premises to let in 1823 states that the "conical chimney 180 feet in circumference and 150 feet high" is the largest in Ireland. See the *Belfast Newsletter*, September 16 1823.

[81] The "cephalic fumes" were commented upon by *Faulkner's Dublin Journal*, 9 August 1770. The Act is titled 23 and 24, George III, *c.*31, and stated that no glasshouse chimney was to be under 50 feet high and none was to be erected inside 800 yards from the offside of the circular roads, nor between the city and Ringsend. The existing premises were not affected. Interestingly a notice in the *Hibernian Journal*, Nov 10, 1786, records a case in the Court of Chancery taken by a local inhabitant petitioning against the building of a new glasshouse on the North Wall near Ballybough Bridge. He was apprehensive that the glassworks would be offensive to him and his neighbours, but the judge dismissed the case with costs, as he had no better grounds than his "ideal fears". This would have been located very near the 800 yards perimeter of the North Circular Road.

[82] This is mentioned in the *Dublin Journal*, August 1787, and noted in *Irish Glass*, p.62.

[83] See Westropp, *Irish glass*, pp.62-3. Raper advertised in 1789 that he was selling London and Bristol crown glass, possibly before his own produce was ready for commercial sale. The *Dublin Evening Post* of March 1, 1798, advertises "window glass of large size and good colour ready for sale"; prospective customers were to apply to John Raper's glass warehouse on Lower Exchange Street. See Appendix Three for more details.

[84] See *Fourth Report of the Commissioners of Inquiry into the Revenue Arising in Ireland*, 1822, p.283, testimony of James Donovan, flint-glassmaker. He also stated that the Dumbarton company were so determined to undermine competition, that "they said they would lose twenty thousand pounds but they would put him out."

[85] Westropp, *Irish Glass*, p.55, and Mary Boydell's papers. The glasshouse was let in 1828. The Boydell files note that flint and window-glassmaking continued there until about 1837. Westropp states on p.66 that Davis had the glasshouse of Elijah Pring (at Fitzwilliam Quay, Ringsend) for a short time about 1848. Davis is listed in Sproule (Ed.), *The Irish Industrial Exhibition 1853* as a glass manufacturer – location not given – selling glass shades, tables of crown glass and bent glass (see the chapter on *Glass*, by W. K. Sullivan, pp.395-400).

[86] It was reported that when Jeudwin, Landon and Lunn closed, they were making £5000 worth of window glass per year. See Fraser, in *DHR*, 1947-8, p.129. Westropp, in *Irish Glass*, p.63 records the *Dublin Journal's* lamentation of the slow progress of the glass manufacture in Ireland, which notes, however, that "there is some increase especially in bottle and window glass, 12,000 feet of window glass having been exported from Dublin this month, April 1788."

[87] See Wallace, in *An Essay on the Manufactures of Ireland*, pp.238. Writing a decade later, the author Edward Wakefield was even less approving of the situation, supposed to have arisen from the want of fuel, which had led to English glass becoming prevalent. "This however can certainly be no excuse for the Irish neglecting so useful a branch of industry; since in London there are many large glasshouses which bring abundant profit, though coals are dearer there than in most parts of Ireland." See Wakefield, *An Account of Ireland, Statistical and Political*, vol. 1, p.755.

[88] The last time Newcastle, French or Rhenish cylinder glass is mentioned in Customs figures in the *Commons Journal* is 1790-91. Thereafter no distinction is made between types of glass, possibly signifying the predominance of crown, both Irish and imported. See *JIHC*, vol. xiv 1790-91, appendix cxxxii et supra. Customs returns for British and foreign goods imported from Great Britain. 'Glass', appendix cliv, mentions Burgundy, Normandy, Muscovy and Rhenish as well as British.

[89] See Cochrane, *Scottish Trade with Ireland in the eighteenth Century*, pp.68-9. By the late 1790s glass represented eleven percent of the total value of Scottish domestic exports to Ireland. 'Scotch' glass was mentioned by Stitt, in *The Practical Architect's Ready Assistant* in 1819,

p.340, table cviii, and Dumbarton glass was specified at the Gilson School, Co. Meath in 1824 (Articles, IAA).

[90] Papworth, *Dictionary of Architecture*, 'Glass'. Papworth gives details of the history of glassmaking, especially in Britain (with some information on other countries), from its beginnings until the date of publication. Pilkington Glass stopped making crown glass in 1872 (see *Two Thousand Years of Flat Glass Making*, p.14) but did continue to produce hand blown cylinders until the 1920s and Chance Brothers continued producing crown until 1934 for restoration purposes (information from Christopher Salmond, glass factor).

[91] See Polak, *Glass*, p.167, for Belgian cylinders lengths.

[92] See Polak, *Glass*, p.21-2. The French called window-glass "grand verre", and the makers of it "were in many ways the aristocrats among glassmakers". McGrath and Frost, *Glass in Architecture*, p.13 note that the makers of window-glass looked down on hollow-ware makes, and although their status never gained formal recognition in France, they had a spirit of independence and a sense of their own worth.

[93] There are very few records; the glassblower at Ballynegerah, in Co. Waterford in the 1620s received this amount. See *Irish Glass*, p.26. Two British sources give wages: Weeden, in *Glass Technology* 24, p.249 notes that principal glassmakers got as much as 47d a day, as against 24d a day for building craftsmen, in the early eighteenth century. Weeden, in *BIAS* Journal, 1984, quotes a 1703 agreement giving 30s per week to the master, 15 shillings to the blower and 10 shillings to the gatherer. Douglas and Frank, in *A History of Glassmaking*, p.142 write that the principal workmen from a Normandy glassmaking family could earn 18s daily during the sixteenth-century in England, as against one shilling daily for carpenters, masons and plumbers. Barker gives more detail in *Glassmakers*, pp.90-92, from agreements of 1839 and 1845. A blower of crown received 26s 6d per week (for 1200 crowns) with a bonus of 25s for an extra 400 crowns. Cylinder blowers received 53s 8d for 425 cylinders of 40" by 30" (or a comparable amount). Glassmakers also got housing and fuel allowances and a guaranteed minimum wage, whereas the next highest paid tradesman, the iron-founder, received up to £2 per week. To

prevent the loss of skilled workmen, the Irish glasshouse managers may have paid their blowers similar rates.

[94] Hall, (J.) *Tour Through Ireland*, vol. 1, p.162, gives the Cork rate. This is quoted in *Irish Glass*, p.213. The rates earned by Belfast bottle-makers in the 1830s (window-glass had ceased there by that date) are given in Atkinson, *Ireland Exhibited to England,* vol. 2, pp.341-2. Apprentices earned five to six shillings per week and workmen as much per day.

[95] Gerbier, writing in *A Brief Discourse Concerning the Three Chief Principles of Magnificent Building* (London 1662, reprinted Gregg, 1969), p.19, is quoted in Louw, Origin of the Sash-window, p.70-1.

[96] Louw, Origin of the Sash-window, p.73. NLI Ms 3107, merchant's account book, 1684-88.

[97] Wainscot was a generic term applied to foreign oak, as was deal the generic name given to pine or fir. See Kinmonth, in *Irish Country Furniture 1700 - 1950*, p.11. *The Concise Oxford English Dictionary* (1951 edition), p.1440, confirms this definition.

[98] Information of a general nature on the procurement of timber for building purposes is found in NLI Ms 3107, in which several prominent Dublin-based Hugenot names figure as timber merchants. See also the recent doctoral thesis by Mr A. Gibney (submitted to TCD) on eighteenth-century building materials in Ireland.

[99] NLI Ms 3107 includes notes relating to building the merchant's own house. "For 12 inch boards, and 12 halfe inch boards for the window shutts, glass frames and window boards, being all of Dansick oake". He imported the oak (and glass) himself.

[100] NLI Ms 392, Dineley, 1681.

[101] The late eighteenth-century measurer, Bryan Bolger, gives prices for wainscot for shutters and window boards in work for Library Square, Trinity College, and mentions new oak sashes for the chapel. PROI, Bryan Bolger Papers, 2 November 1793 (Library Square) and 18 October 1795 (New Chapel). Two decades later, Humphries' *Irish Builders Guide*, pp.124-6, gives prices for deal and pitch pine in most of the sample window dimensions, with oak specified only for sills.

[102] In the *Dromoland Album*, f.88 (photographed by IAA). An estimated date of *c.*1740, based on the other material in the album is given by David Griffin, Director of the Irish Architectural Archive.

[103] St. Patrick's Hospital, Dublin; Specifications by Semple. Transcribed by Dr McParland, TCD. Granard Barracks accounts, reported in *JIHC*, vol. viii (1765 - 72), appendix ciii. Louw, in Origin of the Sash-window, p.150, comments that the solid frame was not only a simpler construction, but it also facilitated the resue of old timber which was not possible with the cased frame.

[104] As mentioned in Humphries' *Irish Builder's Guide*, p.124, "sill of oak 3 inches by 3 and a half inches".

[105] See BM Add 46964A f. 34-6, Egmont Manuscripts for a contemporary judgement on quality. William Taylor, writing to Sir Perceval in 1703 (5th October), recommended 'Danzick' oak, not native. The early nineteenth-century author, Peter Nicholson, in *The Practical Carpenter*, pp.57 - 61, details the sources of timber (into England) and the qualities of each type, and those of each country. In his opinion, foreign oak (but not American) was superior to English.

[106] BM Add Ms 46964A f.35-6, William Taylor to Hon. Sir Perceval, 5 October 1703, referring to the projected rebuilding of Burton Hall, Co. Cork. The same author notes in November 1711, however, that oak was selling at thirty shillings a ton, cheaper than fir at thirty-eight shillings. See BM Add Ms 46964B ff.123-4.

[107] See for example *JIHC* vol. v (1749-56), appendix lxxiv, Bills of scantling, Kinsale Barracks.

[108] The first edition of Chambers' *Treatise*, published in 1759, notes on p.24 that "the sashes of windows are generally made of oak", but subsequent editions refer to sashes of other types of timber. See Louw, Origin of the Sash-window, p.193, on sources of timber.

[109] Louw, Origin of the Sash-window, 194. Mahogany was imported into England from the West Indies from about 1715, but was almost certainly not used for windows during the first half of the eighteenth century.

[110] TCD, P.2/19/27, Sisson, joiner. A bill of 1710 mentions olive wood pulleys. TCD P.2/58/29, Wills, carpenter's bill of 1729 notes *lignovity* pulleys and pins. Lignamvite" pulleys *bush'd* with brass" were specified by Semple at St. Patrick's Hospital in 1749.

[111] Louw, Origin of the Sash-window, p.155. The reference to boxwood and larch relates to the seventeenth century, for which there is no evidence in Ireland. Ibid, page 269 there is mention of mahogany pulleys.

[112] Red fir was mentioned in *JIHC* vol. vi, appendix cccxxii, in a bill of scantling for repairing barracks on the Northwest Circuit. Oak seems to have been more common. The Georgian Society *Records*, vol. i, p.5, refers to no. 30 Jervis Street, Dublin; "the old window pulleys remain, the wheels working in oak blocks on oak pivots." Pain's *Practical House Carpenter*, widely consulted in Ireland gives "small box pullies and pins each 2d; two inch ditto, 3d; wainscot pullies and boxing, each 8d".

[113] TCD P.2/135/7, bill of Turner, ironmonger.

[114] Louw, Origin of the Sash-window, p.180 et seq. Louw in 'Rise of the Metal Window' in *Construction History*, 1987, pp.31-54, enlarges on the argument.

[115] See Louw, Origin of the Sash-window, p.189. See the same author in *Construction History*, 1987, p.37, where he describes the various patented types of metals and constructions that proliferated in England in the latter half of the eighteenth century. The author states that there were complete metal windows made during the era of the Industrial Revolution and he lists their economic and practical advantages: weathertightness and durability, and properties of incombustibility, superior strength and pliability.

[116] Louw, Origin of the Sash-window, p.191. Oak, the heaviest timber in use during the eighteenth century has a relative mass of only ten percent of that of copper, iron, brass or compound metals. See also endnote 61 (p.191) where he gives the mass, k/mg^3, for brass (cast and rolled), bronze, copper, cupro-nickel, iron (cast and wrought), lead (cast and rolled) and munz metal. Deal, fir, mahogany and oak are the timbers given, of which the lightest is deal.

[117] This quotation is taken from the 'Advertisement' in the Preface of Bottomley's *Book of Designs*, *c.*1795, reprinted in Sambrook, *Fanlights*, p.15.

[118] Louw, Origin of the Sash-window, pp.181-2. Ongoing developments in rust-proof alloys, especially in the latter half of the century, started to change public opinion, but mainly where industrial buildings were concerned.

[119] See Sambrook, *Fanlights*, pp.14 - 18. Descriptions of the metals used in fanlights and diagrams of their profiles are given.

[120] The smith and founder were to "provide cast iron sashes for all the windows both in the school and fans over the doors" (the measurements given) "with projecting arms or caulkings thereto to be worked into the walls as they are carried up" and also to "provide that the three upper rows of squares be made to open horizontally with private loops cranks and lines and hooks complete". Due to variations in size, the founder would have to make several moulds. The ubiquitous cast-iron quarry lights which survive in many cottages and outbuildings are presumed to be of the early nineteenth century, although no Irish manufacturers' details have yet come to light to verify date or origins.

[121] The *Almanac and Directory* (Dublin, 1823) lists a solitary metal sash maker. *The Dublin Pictorial Guide and Directory*, 1850, lists two zinc sash manufacturers. The metal sash maker (Edward Lowe) listed in 1823 is given as having separate sash and glass works in 1850.

[122] Jeremy Williams states that Richard Turner started his career as a fanlight maker in Dublin. See *Architecture in Ireland*, p.160.

CHAPTER THREE

[1] Refer to the glossary for definitions of window types and styles.

[2] *Parting bead* is the well-known term. However, in Irish eighteenth-century accounts the word slip is widely used. For example, see the Bryan Bolger Papers, PROI; 17 October 1792: "27 ½ feet of new slips to ten pair of old sashes at 1d per"; 18 October 1795: "... inside casings, parting slips, six pair framed shutters ..." (work at Trinity College).

[3] See Waterman, in *UJA*, 1960, p.94, where he discusses the subject. The canted bow window to the older tower at Donegal Castle may be a later alteration; Wilkinson is of this opinion, in *Practical Geology*, p.124.

[4] Smith, *Ancient and Present State of the City and County of Cork*, p.110. Of the city of Cork, he wrote that the new houses "in the modern taste" had balcony windows in the Spanish fashion, so one could presume that he was also referring to modern buildings in Kinsale.

[5] See Small, (Ed.) *Images of Ireland*, plate 10; the illustration might not be taken literally.

[6] This drawing by the cartographer Sir Thomas Phillips is reproduced in Curl, *The Londonderry Plantation*.

[7] For example, on the north front of the Queen's House, Greenwich, completed 1635, by Inigo Jones. Louw notes that Robert Hooke used the semi-circular arched window in a London project *c.*1673. See Origin of the Sash-window, pp.131-2.

[8] See Loeber, *Dictionary*, p.89.

[9] The vestry book of the church records that a model of the East window was made up by Robinson, possibly to reassure the clergy of its structural feasibility. See Craig, *Ireland*, p.161.

[10] Castle Coole collection, photographs in IAA, memo re. building of stables.

[11] This was designed by Burlington and Colin Campbell, *c.*1721; see Pamela Kingsbury, *Lord Burlington's Town Architecture* (RIBA exhibition catalogue, 1995) p72-3. Campbell's *Vitruvius Britannicus* (London, 1715-25, reissued, New York, 1967), 3rd volume, illustrates similar windows in plates 34 (great hall, Houghton, Norfolk) and 55 (John Plumptree's house, Nottingham). The author would like to thank David Griffin and Alistair Rowan for pointing out the similarity.

[12] Dundrum (its original appearance is conjectured; there have been subsequent alterations) is illustrated in a drawing by Craig, in *Ireland,* p.193.

[13] PROI 2011/3/1, Pembroke Estates, Fitzwilliam Estate Survey.

[14] Craig illustrates several examples in *The Architecture of Ireland.* See pls. 186, 187, 195.

[15] Elton Hall Drawings Collection, Catalogue no. 176. This drawing is not dated but must predate 1751, the year of his death.

[16] See S. Smiles, *Hugenot Settlements in Great Britain and Ireland*, (London 1867), p.300. The (unsuccessful) colony was three miles below Bandon. PROI, 2011/3/1 Pembroke Estates, Fitzwilliam Estate Survey.

[17] As Inigo Jones is credited with the introduction of the Venetian window to England in the 1630s, it is not implausible that it was known before the Restoration in Ireland. Louw, in Origin of the Sash-window, pp.131-2, notes that although it found no favour amongst English baroque architects from the 1680s onwards, it was used by a prominent Scottish architect of the day, James Smith.

[18] Halfpenny, W., *Practical Architecture*, pp.47-8. Halfpenny illustrates several versions of the Venetian type, noting that it "was originally taken from the Venetians but is here represented with its Proportions as used by ye Modern Architects". A variation with no order is called "a window from ye Modern Architects", p.45-6.

[19] Elton Hall Drawings Collection, photographs in the IAA. Drumcondra House, Catalogue no. 27, has a letter from the architect to his client on the reverse. Cat. no. 158, Bellamont Forest is unsigned.

[20] The author has not seen the window at Rathfarnham House; information courtesy of David Griffin.

[21] See Sebastiano Serlio, *The Book of Architecture* (London, 1611, reissued New York, 1980), fourth book, sixth chapter, fols. 29-31. He terms his round windows 'eyes'.

[22] These windows may not be original to the design of the curving walls but are far earlier in style than that used by Lanyon in alterations to the house in the 1850s. They do not appear in the print from which the house design was taken, James Gibbs' *A Book of Architecture*, 1728. See Brett, *Buildings of Antrim*, p.78-80.

[23] Gandon's drawings for front and rear elevations survive, in which he notes details especially concerning the round windows. They were to be made in square frames and hung as if square sashes, to slide up to a lintel placed higher than the top perimeter of the circle. The exterior was to be splayed to assist rain water egress (although if there was an architrave this would not be necessary). Fitzgerald-Kenny album, IAA.

[24] See *Ireland*, p.213. Craig points out that for more formal churches the round-arched window was favoured for many decades to come.

[25] Chambers, *Treatise*, 1791, p.74. He backs this argument by stating that no tailor would mix button types on a coat. An earlier comment would have pleased Chambers. A critic of the West Front of Trinity College wrote that the central bay has "no less than three *different sorts* [of window, of five windows in total], a proof that Variety was studied. The one great window in the centre, the middle siz'd ones on each side, and the attics over them, make an appearance perfectly ludicrous." See the *Freeman's Journal* Jan 14 1768/9, p.157.

[27] Curld's drawings for Castle Coole are now lost. They are illustrated in the exhibition catalogue, *Irish Architectural Drawings*, 1965, no. 33. The elevations for Conyngham Hall, *c.*1708, may be by Curld. The south east front has arched doorcases to both flanking towers. As a semi-circular-arched door of the late seventeenth century survives at Drimnagh Castle, Dublin, conclusions should be avoided unless more evidence is forthcoming.

[28] The house was demolished in the 1940s. Its doorcase is now in the National Museum. See NLI AD 1228, by Leask.

[29] Craig, *Classic Irish Houses,* p.69. Craig mentions the similarity of the lights at Haystown and Kilcrea, both Co. Dublin and of the 1720s, which resemble that at the Library, to some in the Upper Yard, Dublin Castle (now gone). David Griffin is of the opinion that the window is somewhat later. The doorway of no. 33 Jervis Street was illustrated by Leask for the Georgian Society *Records* vol. i, p.4. It is similar to Haystown.

[30] TCD Muniments, P.2/14/15: 1705, sashwork of the gate: "23 foot of Dansk oak for the compas frame.." P.2/69/21: 1735 - "28 feet 2 inches in a large Compas Sash over ye gate House..." The 1728 view of the college by Charles Brooking shows a semi-circular head to the entrance gate/door opening, but it is not clear if this was glazed. Of a date contemporary with the Trinity reference is the comment by Neve, in *The City and Country Purchaser*, p.150, under *curved* work. "I have also observed a light over a door in the front of a building that did consist of two arches of a pretty large circle like a weavers shuttle, lying along, and the whole light was glazed with one piece of glass both parts".

[31] Elton Hall Drawings Catalogue, no. 157 Bellamont Forest (attributed); no. 172 Cashel Palace; no. 140 'Design for a Townhouse', signed E. L. Pearce, December 6th 1731.see Sambrook,

Fanlights, p.32, plate *a* for the Marble Hill light, which was delineated in the drawing of the house (done before it was finished) published by Colen Campbell in the third volume of *Vitruvius Britannicus* (1725). "Most unusually", notes Sambrook "he sketched in the six-panel door and fanlight, unlike the windows which are represented by the customary dark voids". See *Fanlights,* pp.5-6. The signed and dated drawing by Pearce of Drumcondra House (1727) shows a semi-circular-arched doorway, but no light is drawn.

[32] The sashes of most of the 1750s and 1760s lights have been replaced with metal fanlights or plate glass at a later date. The earliest pattern books which include over-door light designs date from the 1750s, although Langley's *Builder's Jewel*, 1741, illustrates glazing arrangements that could be adapted for over-doors. See Sambrook, *Fanlights*, p.8-12. Sambrook is of the opinion that earlier over-door lights reflect an "unconscious" use with no decorative intention and as standard joinery practice were not included in publications. The delineation of the spoked fanlights in the 1762 drawings, similar to Pearce's drawings in that the rest of the windows are left blank, may indicate that they were still considered something of a novelty at that date. See Pembroke Estate Survey, PROI 2011/3/1.

[33] Castle Coole collection, IAA, photograph of drawing in Castle's hand. Doneraile collection, IAA, photograph of no.45, Kildare Street. The segmental stairwell windows discussed above in no. 85 St. Stephen's Green and Beaufort House were also inserted by Castle.

[34] McGrath and Frost, *Glass in Architecture*, p.308-9.

[35] See Casey, Books and Builders, p.22 and conclusion. According to Casey, William Pain's *Builder's Companion and Workmans General Assistant* (Dublin, 1769 edition) popularised the open pedimented columnar doorcase of the 1770s. (This does not appear in the original 1758 edition.) Batty Langley designed the pattern used in Tailor's Hall, Dublin, added in 1770. Langley's *Builder's Jewel* was constantly reprinted from 1741 until 1808 (the Tailors' Hall doorcase is taken from the 1766 and 1768 editions). This book was enormously popular in Ireland.

[36] See Sambrook, *Fanlights*, p.22. The authors speculates that the Venetian entrance, which was adopted at an early date in Dublin and used to a far greater extent than in England, may have in

fact originated in Ireland: "the fully fledged variety, with columns and entablature ... complete with spectacular metal fanlights, can be seen in Merrion Square, laid out in 1762." Even allowing ten or so years for the building of houses, these fanlights predate the Underwood metal fanlight patent of 1774.

[37] Sambrook thinks that there is a possibility that compound metal glazing bars are of Irish origin. See Sambrook, *Fanlights*, p.20, where he also notes that two of the prominent names in London fanlight companies were M'Namara and Doyle, and illustrates patterns from contemporary books.

[38] Traces of gilding were found on these fanlights during restoration in the early 1990s (related to the author by David Griffin). Those over the main doors have been regilded.

[39]A terrace at Rathgar, Dublin, designed by William Murray in 1851 has rounded fanlights, on a Corinthian entablature; see *The Architecture of Ireland in Drawings and Paintings*, 1975. At Fitzwilliam Place, also in Dublin, terraced houses of the 1860s have large semi-circular fanlights, glazed with plate or sheet glass.

[40] Wills' drawings for the house, at Dr Clarke's School, are in the IAA. Venetian windows are shown on the side elevation. Casey, in Books and Builders, p.147, dates the drawing and estimate to 1728.

[41] Turvey is illustrated by O'Dwyer in *Lost Dublin*, p.134.

[42] Barker's 1762 Survey (Pembroke Estates), illustrates a number of lunettes, most shown glazed like spoked over-door lights. All but one of the houses drawn has the lunette in the gable, pediment or top floor. However, one two storey house (marked as "old") has most peculiar fenestration, with just one extremely large lunette to the ground floor (which would not allow for a door), having spoked glazing (see plate 64 ii).

[43] This is illustrated by Craig, in *Ireland*, p.273; it is now demolished. The design appears to be based on the much earlier House of Lords, of 1729.

[44] Monolithic stone lintels have been noted in Ireland, such as that above a door at the early medieval St. Kevin's Church, Glendalough, Co. Wicklow. Some window openings of a very early date were constructed of two stones set at a triangulated arch. See Wilkinson, in *Practical*

Geology, p.143 (illustrated), who calls them angled headed openings. He is of the opinion that this very common type was adopted from aesthetic preferences, as at Roscrea round tower an angle headed window was placed in front of a circular arch.

[45] See Leask, in Jope, (Ed.), *Studies in Building History* p.247. On the other hand, Mallow Castle was examined by Leask, and found to have fared badly in this respect. "The window embrasures were spanned by rows of wooden lintels, half tree trunks in some cases, which have quite rotted away.." See *JCHAS*, 1944, pp.19-24. Similar lintels at Kanturk were replaced in concrete this century, while some of those at Carrick-on-Suir are still in position.

[46] See Lloyd, *A History of English Brickwork* (London, 1928), p212, Pallant House, Chichester and p213-4, Larkfield, Bradbourne, Kent (both illustrated).

[47] See Geoghegan, in *DHR,* 1945, p.49.

[48] Louw, Origin of the Sash-window, p.59. An example of a poorly designed window alteration can be seen at no. 42 Manor Street, Dublin, where a late nineteenth-century window was inserted in the place of a smaller opening, and the earlier lintel removed. The window-head has failed and in the absence of support the wall above is collapsing (to be remedied in forthcoming work).

[49] See Ridge, in *Dublin Builder*, 1861, p.694. In general there is little evidence of such failure.

[50] Craig, *Classic Irish Houses,* p.16.

[51] The illustration in the *Dublin Penny Journal* of the last Dublin cage-work house (reproduced in McCollough, *Dublin*, p.27) and two drawings (one of either elevation) of a Tudor house at Shop Street / Lawrence Street, Drogheda, were consulted. However, an eighteenth-century engraving of a four storey framed house, in or near Drogheda, depicts sills to many of the windows (a copy of this is in the IAA, origin unknown).

[52] Papworth, in *The Dictionary of Architecture*, vol. 1, 'C' p92, notes that *cill* is a recent mode of spelling *sill*. However it predates the nineteenth century in Ireland.

53 NLI Ms 4875, Powerscourt Co. Wicklow, Building Accounts. The 1762 account refers to works at Kilmacurragh (Acton Papers). The drawings for Mount Kennedy, Co. Wicklow of the 1780s use the term stool (see NLI AD 3568 [21]). RHK *Minutes*, 1/1/13, f.321, 1826. In *The*

Londonderry Plantation, p.186, Curl notes a "stool-window", which (he gathered from the records of the Drapers' Society) indicate a window of about six feet long "set in the top part of a recess above seating". Perhaps this merely refers to the presence of a window-sill above an internal window seat. Robert Morris, in *Lectures in Architecture*, (1749 edition) p.150, uses the term 'window-sill'.

[54] Casey, in Books and Builders, p.93, describes the "lugged sill apron" as one of the old-fashioned features of the designs of John Aheron in his manuscript *A Treatise on Architecture* (Dromoland Ms 1741).

[55] BM Add Ms 46947B, 1670, Egmont Papers.

[56] See de Breffny, in *Irish Arts Review Yearbook* 1985, pp.73-77.

[57] RHK *Minutes*, 21 July 1805. Francis Johnston, architect, wrote to the Governors of the Hospital, noting that stone window stools would be an improvement to the exterior. The originals may have been moulded in a manner similar to those at Beaulieu, but on the other hand could have merely been part of the brick Boswell architrave.

[58] See Leask, in *JRSAI*, 1913, p.322. These sills were buried under subsequent masonry. Slate sills survive in parts of Kilkenny City on houses that appear to be of the early nineteenth century.

[59] This characteristic of the Powerscourt sills was noted by David Griffin. NLI AD 3568 (21), Mount Kennedy windows: "seventeen chiselled window stools each five foot ten inches long and to the mold below". NLI AD3568 (28) illustrates the desired shape, noting that "Doyle is desired to prepare his molds with the greatest exactness".

[60] Few (and poor) photographs of the façades illustrate these first floor sills, which were noted by David Griffin before demolition.

[61] Both of these sills are illustrated by Brett, in *Buildings of Antrim*. (They were pointed out to the author by Alistair Rowan.) Kilwaughter Castle was designed by John Nash before 1803. E. M. Jope is quoted by Brett, "the sandstone sills are nicely carved in the manner of the O'Shea Brothers" (p.95). Glendaragh Cottage, Crumlin is *c.*1805 (pp.218 - 19). Brett comments that these sills are "almost certainly unique"and conjectures that the Belfast architect John Millar

employed under Nash was responsible for them at Kilwaughter Castle and probably at Glendaragh. The Coach House, Ashbourne was not recorded before its demolition.

[62] It is not unlike a timber mullion illustrated in the *Builder*, vol. 5, 1847, p.249, possibly of James I era, from Wickham Court, Kent.

[63] The mullions at Royal Spur register a slightly hollow sound when tapped (they were not examined in recent works). Arthur Mss, BM Add Ms 31885, ff.239-241, detail work in Limerick houses. NLI Ms 6899, Lismore Papers, 27 October 1637, [payment to Thomas Pranklin] the freestone lights were for a 'compass' window, which would seem to describe a bow.

[64] See Leask, in *JCHAS*, 1941, drawing of a conjectural restoration. Reproduced here as plate 13. Innocent, in *Development of English Building Construction*, p.260, mentions that "after a time" in the seventeenth century the chamfering of stone jambs and mullions was abandoned in South Yorkshire. Calloway, in *Elements of Style*, p.23, notes that from the mid-seventeenth century mullions acquired an unmoulded profile.

[65] See Leask, in *JCHAS* 1944, p.22.

[66] See Jope, *Ancient Monuments in Northern Ireland not in State Charge*, p.36.

[67] See Leask et al, drawings of Brazeel, NLI AD 1230, and Jope, *Ancient Monuments*, p.36. See also Waterman, in *Sutdies in Building History*, pp.251 - 274. Waterman illustrates the plans of quite a few defensive buildings from all parts of Ireland, all of which show splayed embrasures to the windows. Craig, (in *Ireland*) reproduces plans of many other castles of the sixteenth and early seventeenth centuries, such as Portumna and Burntcourt, which support the premise that the splay was common, probably born of defensive considerations. A plan of Glinsk Castle, Co. Galway (*c.*1630) (*Ireland,* p.132) illustrates both splayed and squared reveals. The basement of this castle has splays, with angled gun loops to most windows, while the main floor has regularly spaced double-mullioned windows, in which the embrasures are almost right-angled.

[68] Plans and elevations of Shannongrove were drawn in 1971 for the then owner. Maurice Craig kindly showed his copy to the author. Some of the plans are reproduced in *Classic Irish Houses*.

[69] NLI AD 1255 - 56, no. 30 Jervis Street, drawn by H. G. Leask in 1907. NLI AD 1318-19, Ardee House, drawn 1943.

[70] See Nicholson, *Practical Carpentry, Joinery and Cabinetmaking*, p.100. The increasing width of this splayed angle is clearly seen in two examples: at Springhill, Co. Derry, the bow end of *c.*1765 has an splay of about 30 degrees from the right angle, while at no. 2, Pery Square, 1838, the spread is nearer to 60 degrees.

[71] Leask, *Irish Castles*, p.82. See also Fairholt, in the *Builder*, vol. 3, 1845, p.410, who wrote of Galway that "the hood-mouldings of all the doors, and many of the windows … always terminate at each side by a gradually inward slope towards the wall, so that each rib contracts to one point, from whence foliated ornaments spring forward and entwine in the most quaint and beautiful manner."

[72] See Leask, in *JCHAS,* 1941, p.74.

[73] Brocas's drawing of Ballyowen Castle is undated. See Crookshank and Glin, *The Watercolours of Ireland* p.142, pl. 180.

[74] Craig and Glin, in *Ireland Observed*, p.21, accredit it to Pearce or his subordinate, William Halfpenny.

[75] Photocopies of some of Gandon's drawings for Emsworth are in the possession of David Griffin, Director, IAA, who kindly showed them to the author. They contain an enlarged plan of the windows with dimensions marked.

[76] The term Boswell has not been found in any architectural dictionary, nor is it known to Robert Brunskill, the English authority on brick. The contract is reproduced by Brian de Breffny, in *Irish Arts Review Yearbook,* 1985, pp.73-77. A letter of inquiry to the British Brick Society elicited some interesting responses, mostly hinging on the word being a corruption of other architectural terms, such as bowtell, or a translation from French or Irish; in Irish *bos* means the palm of the hand and *uile* means full or complete, so the word may have been coined to mean a full palm width (which however would hardly stretch to fourteen inches). There is an old term possibly English of French origin, *bossage*, which is a name for rough ashlar left projecting prior to free carving after the wall has been completed. This word probably derives from the

French *bosse* meaning a protuberance (*bossuer*, to raise a lump on). This information was gratefully received from Micheal Troughton, Andrews and Hazzard Architects (West Midlands) and Thornton Kay, author of *SalvoNews*, no. 152, 9 September 1997.

[77] David Griffin noted these windows during a visit to the building in 1997.

[78] Stitt, *The Practical Architect's Ready Assistant*, p.346. Gilson School Articles, IAA. RHK *Minutes*, 1/1/13, f.321. Craig, *Dublin*, p.191-2.

[79] See Leask, in *JRSAI*, 1913, p.322.

[80] An entry in the Lismore Papers for 1641 (10 August) seems to indicate that the glazed bow to the nursery was made entirely of timber. See NLI Ms 6243.

[81] See Leask in *Studies in Building History*, and in *JRSAI,* 1913, p.322. The Eyrecourt dimensions were taken by the author. The articles of agreement for the building of Blessington House, Co. Wicklow, are damaged, but apparently order dimensions for the "window stufe in the wall to be seaven and f---- inches square" (photocopy, IAA). The remaining section of window frame from Turvey House, Co. Dublin (apparently of the latter half of the seventeenth century), measures six and one-eighth inches by six and a quarter (taken by the author from a surviving fragment).

[82] See Frazer, in *JRSAI*, 1891, p.367. The carpenter, Hiu Mor, signed and dated his work.

[83] Moxon, *Mechanic Exercises* (1703), pp.142-3.

[84] At Doneraile Court a late seventeenth- or early eighteenth-century single piece pulley stile of softwood from the library measures two inches and five-eighths by four and five eighths. At Fenn's Quay, Cork an early to mid-eighteenth-century solid pulley stile measures four inches by three and a quarter. The undated frames of Clochristic House, Co. Carlow are three and five-eighths wide by four and a half inches deep. The 1736 house at Leixlip retains cased but unhung frames perhaps indicating more economic use of timber.

[85] An early instance of using the word 'case' occurs in the Blessington House specifications, 1672; "to putting two window cases in ye gable end". Here the windows were timber-framed leaded windows. To illustrate the inexactness of the term the following references are given. TCD P2/26/22, joinery work 1714: "to 8 feet of sash in a casement for window on half piece in

the stairs in new building at 14d per foot, 9s 4d. To 1 slitt deale in casing with nails and glue, 1s 8d". TCD P2/70/24, carpentry work 1735: "casing a sash 2 sqr & 2 inch red deales at 2s 2d. to three days mending sash caseings and cills and cutting out the rotten etc, 6s". TCD P2/71/20, carpentry work 1736: "casing a sash frame stuff and work etc, 4s 7d". NLI Ms 8037 (2), Fingall accounts, 1738: "118 yards 5 feet in the doors architraves cases window boards and inside casings to windows…".

[86] See Louw, Origin of the Sash-window, pp.148-9 for a discussion of the early cased frame. The use of a piece of wainscot to make a cavity was found only in seventeenth-century frames. Louw notes on p.262 that although thick pulley pieces appear to be an early form, they are not found in all early buildings. As surviving window frames are difficult to examine properly in situ the use in later work of a thick frame for stability cannot be ruled out. In the Castle Durrow accounts (NLI Ms 11469 (2), 1730), Thady Ryan was paid for "caseing the Garitt windows". It is not clear though, from the accounts if the garret windows were lead-lights or sashes. By the time that Malton painted the house in the 1790s it had small-paned timber dormers (plate 45).

[87] TCD P.2/58/25, Wills.

[88] A similarly difficult and uneconomic method of making a sash stile is seen in a frame taken from Clochristic House (which was apparently composed to a large degree of salvaged materials). Here the stile is also of a single piece of oak, but with most of the body of the piece cut out for the weight, leaving only the thickness of a board to the pulley face and interior (see endnote 79 above).

[89] TCD P.2/83/9, Connell.

[90] 'Accounts of the Deanery House, Kilkenny, 1747' in *JRSAI*, vol. xlii part ii.

[91] Semple, St. Patrick's Hospital Specifications, February 1749. *JIHC*, vol. vi, appendix cccxxii, General Bill of Scantling for repairing Barracks on the New Circuit.

[92] RHK *Minutes* 1/1/7, f.123.

[93]Humphries, *Irish Builders Guide*, p.124.

[94] This frame is now in the Brooking Collection (in Charles Brooking's own house).

[95] The *Irish Builder*, vol. xxv, 15 February 1883, p.52. The author also gives his opinion on the standard of jointing of the frame members, that the stiles and linings should all be tongued into one another in good work.

[96] Louw quotes Hawksmoor in Origin of the Sash-window, p.232; taken from Hawksmoor, *Explanation of Designs for All Souls*, 17 February 1715 (1960), p.5-6.

[97] Leask, in Jope (Ed.), *Studies in Building History*, p.247.

[98] Louw, Origin of the Sash-window, p.150. The recessed sash-window (set back about six inches) was thought by Atkinson and Bagenal to be particularly suitable to the windy climate of Scotland; the same could be said of Ireland. See *Theory and Elements of Architecture*, p.336.

[99] Geo II, 3, chap 14 (1729). Craig attributes the content of the Bill in general to Pearce, in *Dublin*, p.174. For mention of it in the *Commons Journals*, see *JIHC,* vol. iii, 10 November 1729. *The Statute Book*, vol. v, p.411 gives the full wording of the law. Clause XVI stipulates that no timber was to appear through the party, front or back wall and that none should be laid "within four inches of the outside" of the said wall. No load bearing timber was to be permitted, except shop-windows and doors. This Act appears to have taken the 1707 London Building Act as its source (Section XIII, the fixing of window and door frames of wood to be set back into wall four inches). A fine of 5*l* or three months in gaol could be levied for transgression. The law was to be valid in any city or town in the Kingdom.

[100] A photograph of this demolished house is in the IAA photographic collection.

[101] See Louw, in Origin of the Sash-window, p.231 for a discussion of the development of the skills involved. RHK *Minutes*, 1/1/9, March 1813.

[102] Skaife, T., *A Key to Civil Architecture* (London, 1774), p.154-5, quoted in Louw, Origin of the Sash-window, p.264.

[103] This author contacted Sun Alliance Insurance Company (in Ireland since 1712) to ascertain whether or not recessed windows were mentioned in policies in the eighteenth century, but the London archives of the company are unsorted and it the archivist was unaware of such a requirement. Louw, in Origin of the Sash-window, p.183, uses the comment of the Associated Architects (England) in their 1793 report into the causes of fire in buildings, to show

contemporary proof that the building acts were "well known to be inefficient, unintelligible and the source of perpetual contention". See *Resolution of the Associated Architects with the Report of the Committee by them appointed to consider the Causes of the Frequent Fires and the best means of preventing the like in Future*, (London, 26 July 1793), pviii. In Origin of the Sash-window, p.212, Louw relates the complaint of an English author, William Cauty, who wrote in 1772 that window frames were still commonly set flush with the face of the wall in London, and that the building regulations were not enforced. See Cauty, *Nature Philosophica and Arts in Concordia, or Nature, Philosophy and Art in Friendship* (London, 1772).

[104] Morris, *An Essay in Defence of Ancient Architecture or a Parallel of the Ancient Building with the Modern* (London, 1728, reprinted Gregg, 1971), pp.91-2. Quoted in Louw, Origin of the Sash-window, p.243.

[105] At Marsh's, some caulking has broken off the second window, showing the solid pulley stile lying against the brick. This window also has wooden pulleys.

[106] *Irish Builder* vol. xxv, 15 February 1883, p.52. Nicholson, *Dictionary* (2nd edition *c.*1860), p.399, "Sash frames are made in Dublin with half-sills". The term 'half-cill' is known in Scotland in connection with repair, as given in Davey et al, *Care and Conservation of Georgian Houses*, p116: "Timber cills are particularly susceptible to decay. A 'half-cill' repair will avoid removing the whole window."

[107] Casey, in Books and Builders, discusses the numbers, provenance and subjects of builders' guides in detail. Earlier joiners had more freedom in design, but by the 1730s as the role of the architect was encroaching on their territory, pattern books became a popular method of ensuring certain modes of detailing were used. At the same time, she writes (p.185) that traditions in building methods were tenacious, handed down from those builders of mainly English origin, who "brought with them the self-same building and measuring practices outlined in contemporary measurers. Undoubtedly they passed these traditions on to their successors."

[108] NLI Ms 4875, Powerscourt Co. Wicklow Building Accounts.

[109] See Craig, *Classic Irish Houses*, p.35. David Griffin offered his opinion to the author.

[110] The terms single and double wrought are taken from joiners' bills and building specifications. Hawney, in *The Complete Measurer* allows "work and a half" for window shutters (and other artefacts) that are wrought on both sides (pp.209-212). A single wrought shutter was worked on one side only, whereas a double wrought one had both sides of the timber panelled to a finished standard. Aheron priced window shuts of whole deal – two inch stuff – at work and a half. See *General Treatise*, p.94.

[111] At the mediaeval Desmond Hall, Newcastle West, Co. Limerick and Ballybur Castle, Co. Kilkenny, oak plank shutters with wooden butts have been made recently to fit into the old sockets.

[112]IAA, photographic collection.

[113] Blessington House Articles of Agreement.

[114] Pocock, in *Modern Finishings for Rooms*, plate F.4, illustrates a pair of three-part shutters.

[115] The *Irish Builder*, vol. xxv, 15 February 1883, p.52.

[116] The stylistic connection between door and shutter joinery is given credence by Salmon, in *Palladio Londinensis*, p.12. Window shutters are measured and valued as doors, by the yard square, allowing work and a half or double work.

[117]NLI Ms11455 (1), Memorandum of Agreement between John Rudd and William Flower, 10 November 1716. Isaac Wills billed for "large framed shutters of one and a half inch framing and three quarter inch pannill" in 1734, at Trinity College. TCD P.2/66/22.

[118] See Pain, *Practical House Carpenter*, plate 42. Chambers, *Treatise*, p.75.

[119] This quotation from the author Thomas Moore repeated local knowledge, as by the time he saw the house it was derelict. See Quennell, P. (Ed.), *The Journal of Thomas Moore, 1818-1841* (London, 1964), p.86.

[120] Dr Beaufort, an enthusiastic amateur architect and diarist of the eighteenth century, saw the windows in Westport House in 1787, noting "shutters in state dressing room panelled with looking glass". See Ellison, in *IGSB*, Jan-Mar 1975, p.28-9.

[121] See Somerville-Large, *Dublin*, p.258. No source is given for the quotation.

[122] Photographs of the drawings for Castle Coole are in the IAA. The originals are in the house, which is managed by the National Trust for Northern Ireland.

[123] Pain illustrates, in plate 41, a fanlight set within a rectangle, of which the corners are embellished with a fluted fan pattern.

[124] Craig, *Classic Irish Houses*, p.37. Stitt, *The Practical Architects Ready Assistant*, p.37. The Georgian Society *Records* note this detail where it is found, as at no. 9, Cavendish Row, Dublin where (in a later alteration to the mid-eighteenth-century house) "the upper corners are very effectively rounded off, fan-shaped and fluted" (vol. 1, p.11).

[125] It was not possible to take photographs inside Townley Hall for this research. Existing photographs do not offer sufficient detail to be reproduced here.

[126] *JIHC*, vol. vi, appendix cccxxii, General Bill of Scantling for repairing Barracks on the New Circuit.

[127] See O'Dwyer, in *Irish Georgian Society Conference Proceedings*, 1995, pp.31-2.

[128] This location is considered likely by David Griffin, who brought the drawing (in the IAA) to the author's attention.

[129] "Lifting shutters" are described in Middleton, *Modern Buildings*, p.136. They are hung with cords and counter-balancing weights similar to sashes. The shutter frames are fixed inside the window frame (a space being left between the two for a blind). A space is provided below the window board to contain the shutters, the window board being hinged so as to cover the shutters when not in use. There are flush rings fitted to the tops of the shutters for the purpose of raising them. When drawn up, the meeting rails overlap to allow fastening with a thumb screw.

[130] See Pain, *Practical House Carpenter*, price lists for 1794. The cost ranged from ten pence a pound to one shilling. Iron covered shutters were not confined to Ireland, as they occur at Ham Manor, Cobham, Surrey, a house of 1743. See Jope, in *UJA*, 1960, p.97.

[131] For information on Santry Court (*c.*1700), see Georgian Society *Records* vol. v, p.88. The shutters of the main floor were of oak, while Joshua Allen, in *Vanishing Dublin*, f.62, mentions the iron shutters and a miniature magazine on the top floor.

[132] See BM Add Ms 31885, Arthur Manuscripts, ff.239-241 for Mungret Street account. NLI Ms 11056 (4), Ormond Papers, Knocktopher Church. The manuscript letter is signed by William Robinson.

[133] TCD P.2/17/27; these shutters were framed with two inch plank. Chambers' and other streets are shown in Georgian Society Records, vol. 1, pp.2-4.

[134] Semple, Specifications for St. Patrick's Hospital, 2 February 1749, f.10. A late eighteenth century drawing by Gabriel Beranger of Christ Church Cathedral (Dublin) West Door shows the adjacent terraced house with external shutters (copy in IAA); these are gone by the time George Grattan (d.1819) made his reliable depiction of the view. See Crookshank and Glin, *Watercolours of Ireland*, plate 172.

[135] A copy of the watercolour 'Vice-Regal Lodge, Dublin' by W. Greenlees, 1838, is in the IAA, ref. 2/7 P.4. Photographs of the 1860s also show the shutters.

[136] NLI Ms 8037 (2), Fingall Household accounts. The outside shutters charged for in this bill probably referred to other windows. See also Beckett and Godfrey, *Windows*, p.131; up to the mid-eighteenth century, when bowed shop windows were became fashionable, shop windows were unglazed and closed with shutters.

[137] Mentioned in Caulfield, *Corporation Book of Cork*, p.419.

[138] See Louw, Origin of the Sash-window, section A and p.262. A very early example of a counterbalanced sash was uncovered in 1997 in Newmarket, Suffolk, in a part of Charles II's country palace, probably installed between 1668 and 1671. See 'Royal discovery charts rise of the sash-window', in *The Times*, 21 August, 1997. One side of the sash was weighted.

[139] Louw, Origin of the Sash-window, pp.3 and 35.

[140] RHK *Minutes* 1/1/2; March 1711 (p.135); estimate for the Governor's Lodgings "for 920 feet of large sashes with double pulleys in twelve windows... @ 18d a foot: £69.0.0."

[141] Lismore Drawings Collection, IAA; undated. The drawing which contains this remark refers to a schoolhouse.

[142] Louw, Origin of the sash-window, p.262. The *Builders Price Book*, 1781, 1785 and 1787 editions give the particulars of single-hung windows (under "sash frames and sashes").

[143] See Louw, Origin of the Sash-window, p.157. Wood screws were costly and used sparingly in the seventeenth century. Their stated function was to fasten the sashes, which probably meant to fix the beads or plates that held the sashes in position.

[144] See BM Add Ms 46946A. Added to this was the stipulation that he should provide all brads and nails necessary in the building work.

[145] See BM Add Ms 46947B. Not all manuscript information is as forthcoming. Most references are to iron for the bars of windows, which could mean iron-framed casements or fixed lights, or bars for shutters. Aheron gives rates for hammered work for "upright window bars" in his *Treatise*, p.62.

[146] The upright bar is called a 'standard' and the horizontal one a 'staybar' in Calloway, *Elements of Style*, p.23. A locket is horizontal bar with a loop to hold the standard.

[147] See McCann, in *Period Home*, June-July 1982, p.13-17, who notes that external oak bars supported the leaded panel against pressure (from wind or burglar).

[148] Semple, St. Patrick's Hospital specifications, 1749, f.10 and f.15.

[149] Two examples show this, NLI Ms 10470, Castle Forward, Co. Donegal (1738): "to 21 paire of sash springs". RHK 1/1/2, 1710: "for 148 casements with iron springs".

[150] Luckombe, *Tour Through Ireland*, p.27, quoted in the exhibition catalogue, *Irish Houses and Landscapes*, p.11; indicated to the author by David Griffin. This building has been demolished.

[151] St. Patrick's Hospital Specifications, 1749. PROI, Bryan Bolger sundry public building measurements; Hibernian School, Pheonix Park, 5th July 1805. "Six pair of brass pully boxes, lines and weights … and inserting ditto". The Royal Hospital paid for brass pulleys for the Adjutant General's house in 1817 (designed by Francis Johnston). See RHK *Minutes*, 1/1/10, f.308. The box type was not mentioned. The *Minutes* of 1796, on the other hand, note pulley pieces four inches thick and six inches broad for the Chapel, which would appear to describe the dimensions of timber cases (see RHK 1/1/7, f.123). The Gilson School was fitted with "brass axle pullies" (Articles, 1824) while Stitt priced "brass front pulleys including inserting" at two shillings the pair, in the *Practical Architect's Ready Assistant*, p.37.

[152] The English Heritage *Listed Building Guidance Leaflet*, 'Windows', p.2 verso, notes that prior to *c.*1780 pulleys were not mass-produced. It would seem unlikely that pulleys were made on an industrial scale in Ireland.

[153] See Louw, Origin of the Sash-window, p.156. Those at Hampton Court are positioned in the panelling above the windows.

[154] RHK *Minutes*, 1/1/1, f.182. On the other hand the term sash-screw may possibly indicate the use of a woodscrew (see above). An example of the sash-screw is given in *JIHC* vol. v, 1749-56, appendix liii: "13 sash screws and one key and putting on", in Parliament House repairs, 1751. See also Louw, Origin of the Sash-window, p.272-3.

[155] Louw, Origin of the Sash-window, p.273. Although meeting rail catches were known in the mid-eighteenth century, the barrel fastener with spring and screw is thought to be an invention of the mid-1770s, when it was patented, which was rarely used during the remainder of the eighteenth century due to expense. There is no sign of any other, earlier, lock on the Henrietta Street windows. The exactitude seen in the drilled hole echoes that found in the construction of the iron and hardwood windows at Upper Merrion Street (see below).

[156] TCD P.2/38/14, Danell, smith, Jan 1718/9; TCD P.2/135/11, July 1763, Turner, for Provost's House.

[157] TCD P.2/36/23, Sisson, laboratory, 1718; P.2/65/8, Wills Printing House, 1733-4; P.2/83/9 Connell, for the Provost's House, 1742. St. Patrick's Hospital, specifications 1749, f.15.

[158] See Price, *Builder's Guide*, p.99: a dozen of shutter hinges of six inches sold for 7s 6d, seven inch for 10s 6d, nine inch for 16s 9d.

[159] NLI Ms 9536, Townley Hall papers.

[160] In fact, Pain prices I-L hinges in the 1794 edition of *Practical House Carpenter*. See Louw, Origin of the Sash-Window, p238, on the introduction of the butt hinge, a French development of the 1740s, first patented in England in cast iron in 1775.

[161] *JIHC*, vol. v, appendix liii, Parliament House repairs, 1751. Timothy Turner, ironmonger: "a pound of best red sash line, 1s". TCD P.2/58/25, 1729; bill of Wills, carpenter: "4 pound of strong cord (to draw [the windows] up) at 15d per pound".

[162] Louw, Origin of the Sash-window, p.155. Louw also quotes from the *Builders Price Guide*, 1781 edition.

[163] See Vicars, in *JCKAS*, 1891, who was of the opinion that the recesses visible in the reveal were for the timber mullions. Little evidence survives now, but as the building is attributed to John Allen, a Dutch builder, it was quite likely the material of choice. See also Leask, in *Studies in Building History*, p.245.

[164] NLI Ms 6243, Lismore Papers. Leask, in *Studies in Building History,* p.247.

[165] See Louw, Origin of the Sash-window, Section A and p.151.

[166] The muniments of Waringstown House are being catalogued by the owner and will be available to researchers in the future.

[167] St. Patrick's Hospital Specifications. BM Add Ms 46946A. RHK 1/1/7, f.123. These were specified to be two and a half inches broad.

[168] Wilkinson, *Practical Geology* p.128.

[169] See Westropp, *Irish Glass*, p.19-20. For further information, see Appendix Three.

[170] The glass (and wainscot) for the castle was ordered from Antwerp by the agent of Sir Thomas Gresham. See Loeber, in *Architectural History*, 1979, p.54. The extravagance of Richard Boyle, Great Earl of Cork, is seen in that his stables at Cappoquin, Co. Waterford were glazed in 1627. See Lismore Papers, NLI Ms 6897, Nov 9 1627.

[171] The Rathfarnham casement of perhaps one hundred years later measures less than thirty-six inches by twenty-four.

[172] This measurement has been taken from windows of *c.*1570 to *c.*1830 by John McCann. See McCann, in *Period Home*, June-July 1982, pp.13-17.

[173] According to Innocent, in *The Development of English Building Construction*, the lattice developed from a crossed trellis of twigs or branches used to close a window opening; it is possible that a diagonal format was found to be more effective than a squared one, which continued when glass was introduced. The making of the lattice was sometimes listed in building accounts under wire-work, at other times, such as at Lismore, it is accounted for in the smiths work. See Lismore Papers, NLI Ms 6899, 7th September 1639: "to Garret Lynough for

making of 166 foot of lattice for 12 windows of the stables at Lismore at 2d per foot". The RHK *Minutes* 1/1/1, f.235, 1703 note two "weyer" lattices for ye scullery windows.

[174] For the Ballynegerah accounts, see Westropp, *Irish Glass*, p.29 (Stephens, the glazier of Limerick). Lismore Papers, NLI Ms6899, 21st Feb 1637.

[175] For the Blessington House information, see the contract dated 1672 (IAA). BM Add 46947B, contract for Burton Hall.

[176] TCD Muniments, series P.2, which start in 1684, are sparse until *c.*1700. P.2/2/14, 1685, gives details of repairs in the Purser's study. (Louw, in Origin of the Sash-window, p.221 notes that the 1683 front of Trinity was given sash-windows, but no corroborating proof is found in the muniments.)

[177] Trinity College muniments, the Flower papers (Castle Durrow), and the papers of the Earl of Fingall are detailed enough to support the theory that squared glazing was more popular.

[178] See TCD Muniments, P.2/74/48 (Rowlette, glazier) for the square sizes. The pane eight inches square cost 4d, one foot square cost sixpence, and both fifteen and sixteen inch square cost eight pence. NLI Ms 8036 (3) Fingall papers; James Switsir, glazier sold glass of this size to Flinn for the use of the Earl of Fingall, probably for the leaded windows in Killeen Castle.

[179] Prices taken from Price, *Builder's Guide*, p.9, Neve, *City and Country Purchaser* p.148, Aheron, *Treatise,* p.96, and Salmon, in *Palladio Londinensis*, concur, with prices of five to eight pence per foot, "according to the goodness of the glass".

[180] This is termed 'pinning casements' by Neve, in *City and Country Purchaser*' p.153: "putting lead pins through the iron frame and soddering them, thereby to fix the glass to the frame." For the description of the pintle hinge, see McCann, in *Period Home*, 1981, pp.44-5 and glossary.

[181] McCann has noted that in seventeenth-century English samples, saddle bars (of vertical oblong section) were butt-welded in the plane of the frame, and in the eighteenth century they were lap-welded or secured by cold-hammered dovetail joints. See *Period Home*, June-July 1982, pp.13-17.

[182] Two references to sixteenth- and seventeenth-century Irish works show that in timber-framing some use may have been made of timber-framed lights. At Lismore Castle in 1641 a

timber bow window was constructed by carpenters who also glazed the sides of it; there were four casements made, but no reference is made to a smith. See NLI Ms 6243, 10 August 1641. An earlier account for the building of Tailors' Hall, Dublin (1583) refers to "joiner for the windows ... 0.1.6", although a smith is also paid for unspecified work. See Berry, in *JRSAI*, 1918. Louw quotes Sir Balthazar Gerbier who castigated the wooden casements seen in old English houses in 1662: "the casements scarce above one foot and a half high, tottering things". Origin of the Sash-window, p.70-1.

[183] The term sash may have been applied to any jointed timber light at this early period. For example, the Chapel of the Royal Hospital had repairs done in 1698, necessitating 60 feet of sash (RHK 1/1/1. f.105), but a direction to the architect just over a year later makes it clear that the windows had not previously had opening sections: "for making four casements to the windows in ye hospital chapel for letting in ye airs and keeping it sweet". (RHK 1/1/1, f.139). The term casement was most often used to describe a hinged light, but the adjectives folding or sliding could change the meaning from hinged to hung.

[184] See below, under *Sash joints: scribing and blocking*. The theory about the age of the lights has been mentioned in Chapter One.

[185] See Berry, in *JRSAI,* 1918, p.42. No reference is made to smith's work. A Taylor, carpenter, was paid the most substantial amount. Included is the note "Casements for the Hall, £1.12.0". The present windows are much later in date.

[186] These dates were furnished by Dean Lynas from the records of the cathedral, as years when large amounts of money were laid out on building and tradeswork.

[187] Nicholson, in *Practical Carpentry, Joinery and Cabinetmaking*, p.98. Comments such as this echo Chambers' dislike of them on grounds of their heavy hinges and closing apparatus "weighing a hundred weight or two". See *Treatise*, (1768)p.75.

[188] Both Marsh's Library and Kilmacurragh have original panes of about this height. At Marsh's Library the panes are about eight-and-a-half inches wide; at Kilmacurragh the width is nine-and-a-half inches. A slightly later house, Castlelough, Co. Tipperary, has panes of eleven and a half inches by less than eight and a half wide. The panes of the Brazen Head window measure

about twelve and a quarter inches by eight. This small size was also measured at Skiddy's Almshouses, Cork, where the sashes are probably of the late eighteenth century but follow the configuration of the originals as seen on the 1721 print of the building. The panes of the horizontal casement window at Waringstown, made to almost miniature scale, are about six and a half inches high by almost five wide. No. 50, Pope's Quay, Cork, which apparently dates from the 1740s, has an original stair window with panes of just nine and a half inches high by less than eight wide.

Louw found that sizes of twelve by nine inches were used by Wren in Whitehall, 1685-6, but earlier windows, in Whitehall (of 1665-6) had sashes with panes of thirteen inches by eleven. See Louw, Origin of the Sash-window, p.56.

[189] Quoted by Louw, in Origin of the Sash-window, p.65, from R. T. Gunther, *The Architecture of Sir Roger Pratt* (Oxford, 1928), p.72. The mullioned sash-window at Waringstown has panes of seven and a half inches by twelve and a half (plate 159), which quite elongated proportioning may further the evidence in favour of an early date by indicating a lack of familiarity with prevailing styles.

[190] TCD P.2/74/48, Rowlette, 1740.

[191] A late seventeenth-century fashion found in the work of some baroque architects was for a calculated effect derived from using different sized glazing grids (in shaped windows or those on floors with different uses). Wren utilised several sizes of pane in both Hampton Court and at the Royal Naval Hospital, Greenwich to good effect; but no similar example has been found in Ireland.

[192] Cruickshank and Burton, in *Life in the Georgian City*, pp.137-143, cover the issue of proportion in Georgian windows in detail.

[193] *Leinster Letters*, vol. ii, p.158. Louisa's sister, who drew up the plans, sent a sketch with the dimensions marked on it. The glass was not specified but may have been French plate, as the writer mentions excise duties.

[194] The Bellinter basement window panes measure (on south front) ten and a half inches high by eleven and a quarter inches wide. The panes in the over-door lights at the Deanery, Kilkenny are also noticeable horizontal in proportion.

[195] See Ryland, *History of Waterford*, p.346. As noted above, the largest light measured in Lismore Castle is about thirty-two inches tall. It should not be presumed that German sheet was used here, as by this date crown glass was being made in sizes which could accommodate such large panes (although many of the present panes are cylinder glass). The Regency Gothic extension to no. 85 St. Stephen's Green has floor to ceiling sashes (in six panes), each over thirty inches tall, some still retaining the original crown glass, cut at a distance from the bullion.

[196] Ridge, in the *Irish Builder*, 1861, p.705.

[197] St. Patrick's Hospital Specifications, 1749. "The sashes are to be block sashes..." Semple specified "inside framing of two inches square when wrought..." See also Esdall's Newsletter, no. 572, 13-16 Dec 1751: Thomas Silcock, glazier and printseller describes the sashes he sold, "of seasoned red deal, block'd and made out of full stuff".

[198] This is the oldest commentary so far found on this sash detail, from the Georgian Society *Records*, vol. iv, p.86. The remark was made about some windows of the 1740s in Dawson and Kildare Streets, Dublin. The word 'dye' is used by Chambers in his *Treatise*, p.73, to refer to the square blocks on the columns on a Gibbsian window surround.

[199] Louw, in Origin of the Sash-window, reproduces *Centre des Recherches du Monuments Historiques* diagrams of glazing bar jointing from a seventeenth-century building at Troyes, France.

[200] Louw, Origin of the Sash-window, p.266. BM Add Ms 33442; accounts of 1714-17 for Newcastle House and Claremont Estate.

[201] The library windows were glazed in 1723, however the information on the making of the sashes is scanty.

[202] The windows at no. 28 Parnell Square, Dublin (mid-1760s) were constructed with blocks covering the joints. An original basement sash-window survived until late 1997 which was photographed by the author before its destruction.

[203] Windows with these detail include no. St. Werburgh's Church (two piece block over finished bar), nos. 11 and 25 South Frederick Street (moulded and cut out respectively), and no. 42 Manor Street (moulded), all in Dublin.

[204] See Louw, Origin of the Sash-window, p.280. O'Dwyer, in *Irish Georgian Society Conference Proceedings*, p.30.

[205] See Proudfoot and Walker, *Woodworking Tools*, p.40-1.

[206] Louw describes the effect seen on the inside of the window: "the transom bars instead of the munnions appear to run through continuously which is contrary to constructional common-sense that demands the bars in the direction of movement to be continuous to ensure greater rigidity – while on the outside the reverse happens, the munnions run through and the transom bars are infill pieces." Louw, Origin of the Sash-window, p.154.

[207] Louw, Origin of the Sash-window, pp.154 and 263. Louw comments that the construction of the two-piece bar reduced the intricate ovolo moulding to two more easily manageable components for the still rather crude woodworking tools of the late seventeenth century. Ledwithstown, Co. Longford has been seen by the author.

[208] For information on tools, see Proudfoot and Walker, *Woodworking Tools*, p.28-9, Moxon, *Mechanic Exercises*, pp.71-3 and Louw, Origin of the Sash-window, pp.195-7. Papworth mentions Paxton's invention in his *Dictionary*, under 'Sash Bar'.

[209] See Louw, Origin of the Sash-window, p.153.

[210] Proudfoot and Walker, in *Woodworking Tools*, p.37, call the astragal and hollow "cove and astragal".

[211] PROI, Bryan Bolger Papers: work at Trinity College, April 1793 (*ovella*) and January 1795 (*astrigal*) sashes billed per foot. A bill for October 1795 refers to astrigal hooked sash. This may mean astragal and hollow. Gilson School Specifications, 1824.

[212] See Louw, Origin of the Sash-window, p.263.

[213] See Louw, in Origin of the Sash-window, p.167-8 on the fragility of early sashes. Vanbrugh was writing of the sashes in the Duke's study, Blenheim Palace, which are decorated with carved glazing bars and blocked joints. The windows are glazed with bevelled plate glass, which

would in part account for their having to be so massive. See *Country Life*, 27 May 1949, p.1249 (fragment of article in possession of David Griffin).

[214] The Hampton Court measurement is given by Louw, in Origin of the Sash-window, p.56.

[215] The printing house was designed by Castle. See TCD P.2/65/1: Joseph McCleery and Moses Darley proposed making deal sashes and frames two inches thick. This not dated, but other bills for the building are *c.*1733-4. At the contemporary Ballyhaise by the same architect the bars are just short of two inches.

[216] Wills, Bill of Scantling, Schoolmaster's House, Drogheda, IAA. See Casey, Books and Builders, p.147. A surviving sash from Leinster House is now in the IAA. The slightly narrower bar appears to be an exception for this architect (judging by those windows designed by him that were examined in this research).

[217] Louw, in Origin of the Sash-window, pp.237-9, elaborates upon the background to Ware's comments (published in *A Complete Body of Architecture*, 1756), remarking that alternative styles were gaining ground all the time, even in the heyday of the Palladian movement.

[218] See *JIHC*, vol. vi, appendix cccxxii; General Bill of Scantling for Repairing Barracks on the North West Circuit.

[219] This theory is put forward in the *Framing Opinions* Leaflet 4, 1997. "As with so many elements of the Georgian house, glazing-bar patterns and profiles varied according to the social status of the window. Thus, for example, basement or attic windows, used only by servants, were often fitted with old-fashioned, obtrusive ovolo glazing bars and inferior-quality glass." Security has been identified as another reason for the thick bar. However the major deterrent to burglary would always have been the closed shutter. No. 13 Henrietta Street was burgled in 1755, as related by *Faulkner's Journal*, at a time when the original, blocky sashes were still in situ. See issue no. 2982, repeated in Georgian Society *Records*, vol. ii, p.22. Thieves "did come over the railings streetwards".

[220] The term horn, according to Papworth, is applied to the "portions which project beyond the rest of a piece of framed work, as in the case of the head of a solid door-frame." The term may have its origins in the word employed to describe each of the four projecting portions of an

abacus which has its faces curved on plan. See Papworth, *Dictionary of Architecture*, under 'horn'. This author does not mention the sash horn. The horn may also be called a joggle or bracket. The inclusion in Stitt's *Practical Architect's Ready Assistant* of the word joggle in his pricing of windows is interesting and may be the earliest reference to this development. See Table LXIII; sash frames: "measures nett 18 foot, tennons, joggles, d° / 20 foot of pully-pieces and rabbeting cill, including casings, at 9^{d} per … 15^{s}". Middleton, in *Modern Buildings*, p.129, terms the horn a bracket.

[221] Louw, Origin of the Sash-window, p.280. According to Louw Nicholson's *Architectural Dictionary* of 1819 illustrates the horn. (The later edition of this work which was available to the author mentions the horn only in connection with structural carpentry.) Another theory links the horn to safety in the use of sashes, to prevent the top sash falling down to the sill and crushing the fingers. (Such a theory cannot account for injury sustained by the falling of the lower sash, however.)

[222] It has been suggested (by English window expert, Charles Brooking, in conversation) that horns were found in Ireland at an earlier date than in England, possibly from *c.*1800.

[223] See *JIHC*, vol. xii, appendix dclxx, Barracks accounts, money paid to J. Lowe, 1787. *JIHC* vol. xv, appendix lxiii 1791, New Law Courts. The metal sashes at the King's Inns (many of remain in the basement) were noted recently by a joiner working there. The RHK *Minutes* 1/1/10, f.225, June 1814 mentions one metal sash and glass for the entrance door to the chapel (under carpenter's work).

[224] *Records*, 1913, vol. v, p.102. The house was burnt in 1922. It is quite likely that further research in existing buildings will uncover more of these sashes.

[225] These windows were not seen by the author, but their form was related by David Griffin.

CHAPTER FOUR

[1] Both are quoted in Louw, Origin of the Sash-window, p.57. Sir Christopher Wren was referring to Salisbury Cathedral.

[2] This comment by Willem Goeree, in 1681, is cited in Meischke, R., and Zantkuijl, H., *Het Nederlandse Woonhuis van 1300 tot 1800* (Harlem, 1969), p.433. It was translated by Henti Louw, and quoted by him in *Companion to Contemporary Architectural Thought,* p.301.

[3] The window could display the hopeful daughter of marriageable age; Swift penned the lines "she ventures now to lift the sash; the window is her proper sphere". The quotation is taken from J. A Murray, *New English Dictionary on Historical Principles*, (Oxford 1914) vol. viii, p.114-5, under 'sash'. The poem is entitled 'The Progress of Beauty'. See Harold Williams (Ed.), *The Poems of Jonathan Swift* (Oxford, 1928), vol. ii p.225 et supra (line 65). Louw, in Origin of the Sash-window, p.210, who quotes these lines, elaborates on the early eighteenth-century dislike of the vulgarity of display suggested by large windows.

[4] As noted by Kaufmann, in *Architecture in the Age of Reason*, p.11.

[5] See Halfpenny, *Practical Architecture,* preface. (Pain was referring to the orders primarily.) Louw, in Origin of the Sash-window, p.246.

[6] Andrea Palladio, *Four Books of Architecture*, first book, chapter xxv; (Dover Publications, 1965), p.31.

[7] Louw, Origin of the Sash-window, p.114 and McGrath and Frost, *Glass in Architecture*, p.100.

[8] From Gibbs, *Book of Architecture*, 1728, quoted by Kaufmann, in *Architecture in the Age of Reason*, p.7.

[9] Clifton Taylor, *The Pattern of English Building*, p.396.

[10] McGrath and Frost, in *Glass in Architecture*, p.152, find that ornament was used to mask the deficiencies within classical fenestration.

[11] Louw, in Origin of the Sash-window, p.108, coins this phrase.

[12] Aheron, *Treatise,* in the *Advertisment.*

[13] Ware, *Complete Body of Architecture,* Book III, chapter xxi, p.315.

[14] Louw, Origin of the Sash-window, p.55. The term arose not only as sizes increased dramatically but also as each sash-frame was far larger than a contemporary casement

[15] Aheron, *Treatise*, p.81: "The width of the *Windows*, with regard to that of their Jaumbs, that is, with regard to the Breadth of the Wall between the two *Windows*, may be as three to four, in

temperate Climates like ours: as three to five in hotter or colder Climates, as three to six in countries still more expos'd to violent Heat, or violent Cold".

[16] Craig, *Classic Irish Houses*, p.24.

[17] The warning is found in Palladio, *Four Books*, first book, chapter xxv, p.31, Wotton, *The Elements of Architecture* (London, 1624), p.52 (quoted in Louw, Origin of the Sash-window, p.114), Neve, *City and Country Purchaser*, p.282 and Aheron, *Treatise*, book ii p.58.

[18] See Palladio, *Four Books*, chapter XXV, pp.30-31; the window should be no wider than the forth part of the breadth of the room and no narrower than one-fifth. The height should be a maximum of two and one-sixth of the width. Palladio is quoted in Louw, Origin of the Sash-window, p.112.

[19] See Louw, in Origin of the Sash-window, p.112, compares Italian and French window sizes and notes the French interest in setting a sill height.

[20] See Loeber, in *IGSB* 1973, p.33, and in *Architectural History* 1979, p.51-2.

[21] Wittkower, 'Pseudo-Palladian Elements in English Neoclassicism', in *Palladio and English Palladianism*, (London 1974), quoted by Louw in Origin of the Sash-window, p.242.

[22] See Craig, in *Classic Irish Houses*, p.22 (as noted in Chapter One) on the wide use of the Venetian. In contrast Kaufmann writes that Venetian windows were not a baroque variation of the Palladian motif, as the "outer arch [sic] deprives the central light of its predominance" Kaufmann, *Architecture in the Age of Reason*, p.13.

[23] McGrath and Frost, *Glass in Architecture*, p.101. When the transomed Gothic window was revived towards the end of the eighteenth century, the transom was usually set above the centre; perhaps there was a natural proclivity in this direction.

[24] McGrath and Frost, *Glass in Architecture*, p.101-2. The preference for the cross-window expressed also by Atkinson and Bagenal, in *Theory and Elements of Architecture*, may reflect an early twentieth-century backlash against the long-dominant window type, newly ousted in favour of those of modern design and material (as noted in Chapter One).

[25] As stated by Louw, in Origin of the Sash-window, p.244.

[26] Louw, Origin of the Sash-window, pp.162-5 and 275.

[27] See McGrath and Frost, *Glass in Architecture*, p.99. Improvements in glass technology in the nineteenth century and the reduction in the prominence of classical ideals allowed for the first time large, elongated window-panes which could be utilised to advantage in the overall orientation of the mass. In reality, however, they were seldom used in Irish buildings.

[28] McGrath and Frost, *Glass in Architecture*, pp.149, 151-2.

[29] Papworth, in *Dictionary of Architecture*, 'Window Tax or Duty', notes increases in 1746, 1778, 1784 and 1797, 1804, 1808 and 1825.

[30] See Louw, in *Construction History*, 1991. Only houses with fewer than six windows were exempt, as were windows under a certain (small) size, and those in rooms used for specific work such as weaving or dairying. Greenhouses were not included, unless attached to the house. See R. L. Chance, in the *Thirteenth Report of the Commissioners of Excise Inquiry*, p.138.

[31] The schedule of Rates and Duties is printed in full in *JIHC* vol. xviii, 1799, Appendix ccxxx. The sum paid by Bolger is noted by T. Kelly, in *DHR*, 1940, pp.8 - 18. Lord Shannon's liability is given in Cathal Crimmins, Henrietta Street, A Conservation Study (UCD MUBC Thesis, 1987), p.146. (Source: Public Record Office, Northern Ireland, D 2707/B 15.) The 75 windows related to two houses in Henrietta Street and Furry Park House.

[32] See Louw, Origin of the Sash-window, p.213. Louw remarks that there was something of an alliance between the Palladians and the Window Tax against over-windowed baroque designs.

[33] Gandon was not in favour of the profligate use of windows (as remarked upon in Chapter One). He designed blind windows in many of his monumental works, but at Carriglas, Co. Longford, he contemplated inserting them (in designs of *c.*1790) even on the front elevation of the villa. This is commented upon by the Knight of Glin in *The Country Seat*, p.189, as surprising in a domestic context. Over a century earlier, in 1682, Thomas Smith, the architect for Burton Hall, wrote that he would like to place window-frames in "ye dead walls" of some outbuildings otherwise it would "look very un-uniform", noting that if changes were made in the uses of the buildings the windows could be made to open through the walls, and that in the meantime they should be "glassed without". His patron replied that he approved of the "false lights". See de Breffny and ffolliott, *Houses of Ireland*, p.70, and BM Add Ms 46958B, f.246.

[34] See *Ardress House*, pp.10 and 12.

[35] Louw notes that prices increased upon imposition by about one-third (reported by Salmon, in *Palladio Londinensis*, p.61), and that the rate doubled in 1777. See Origin of the Sash-window, p.212.

[36] See McGrath and Frost, *Glass in Architecture*, pp.22-3. In 1835 the Cork Trades Association petitioned Parliament, complaining about the duty of 73s 6d. See Westropp, *Irish Glass*, p.212.

[37] Swift is quoted by the Knight of Glin in his thesis The Irish Palladians. See Williams (Ed), *The Poems of Jonathan Swift*, p.727.

[38] Craig, *Dublin*, p.96. Bowen, *Bowenscourt*, p 22.

[39] The *Irish Builder*, vol. xxv, 15 February 1883, p.52.

[40] The collector Charles Brooking put this theory to the author in conversation.

[41] Lismore papers, NLI Ms 6899, 21 February 1637/8: "145 foot and ½ of Normandy Glass well symented at 8d the foot". TCD P.2/8/12, glazing bill, Provost's quarters. RHK *Minutes*, 1/1/2, f.162, new sash-window, Governor's lodgings.

[42] Burton Hall, BL Add Ms 46964A ff.35-6. St. Werburgh's, NLI Ms 104. Gilbert, J. T, *Parliament House Dublin*, (Dublin 1896) p.22-3. In a letter from Pearce to the Viceroy in 1728 it was estimated that 4,354 feet of Bristol crown glass would be needed.

[43] This is inferred from the survival until recently of slips for dry glazing seen by David Griffin, which method of securing panes was carried out only on plate glass.

INQUIRY INTO THE REQUIREMENTS...

[1] The first publication to assemble and dissect such information is Dr Dorothy Bell's *Guide to International Conservation Charters,* which is quoted extensively in this essay.

[2] Ruskin, 'The Lamp of Memory', in *The Seven Lamps of Architecture*, vxiii, quoted in Bell, *Guide to International Conservation Charters*, p.82-3.

[3] Bell, *Guide to International Conservation Charters,* p.47, 6.9a and b. The terms in italic are expanded upon in the glossary.

[4] *The Appleton Charter for the Protection and Enhancement of the Built Environment*, Ottawa, 1983, B: *Levels of Intervention*, defines rehabilitation. See Bell, *Guide to International Conservation Charters,* p.42, 6.3a iv for *adaption.* Rehabilitation is more usually used in reference to renovation works to complete buildings or groups of buildings.

[5] *Australia ICOMOS Charter for the Conservation of Places of Cultural Significance* (*Burra Charter*), articles 17, 18 and 19.

[6] Bell, *Guide to International Conservation Charters*, p.48, 6.10.

[7] A letter from T. Austin Dunphy to the author, dated 11th August, 1997, on the restoration of the Casino at Marino, Dublin.

[8] This report, entitled *Strengthening The Protection of the Architectural Heritage*, was submitted to the Minister for Arts, Culture and the Gaeltacht and the Minister for the Environment by the Interdepartmental Working Group (Stationery Office, Dublin 1996). Unfortunately there has since been a change of administration and further developments are awaited.

[9] Morris, 'The Beauty of Life', a lecture delivered at Birmingham in the 1880s. A short extract is quoted by Piper in *Buildings and Prospects*, p.90.

[10] According to the *Deschambault Declaration* (ICOMOS Canada, 1982), very citizen has "an individual responsibility to protect their heritage. They must do all they can to appreciate its value, to strive to understand its full significance, and to contribute to its preservation." Quoted in Bell, *Guide to International Conservation Charters*, p.57.

[11] The energy lobby tends to concentrate on energy levels of products in use, ignoring the costs of production, disposal and embodied energy.

[12] Council of Europe, *Amsterdam Charter of the Architectural Heritage*. Quotation taken from Bell, *Guide to International Conservation Charters*, p.9.

[13] John Fidler, "Putting Windows in the Frame", in *Building - Doors and Windows Supplement* 30 October 1992, pp 10-11.

[14] Bell, *Guide to International Conservation Charters,* p.64.

[15] Bell, *Guide to International Conservation Charters,* p.65.

[16] Bambrough, in *Stained Glass*, 1996, issue 1.

[17] Recommendation R (80) 16 on the specialised training of architects, town planners, civil engineers and landscape designers, 1980. Recommendation R (81) 13 on action in aid of certain declining craft trades in the context of craft activity. Recommendation R (86) 15 on the promotion of craft trades involved in the conservation of the architectural heritage. See Bell, *Guide to International Conservation Charters*, p.57-63 for an outline of their content under subheadings related to the different types of education.

[18] In Ireland the general unfamiliarity with the details of the window has not as yet resulted in a tendency by the Heritage Services to "Georgianise" buildings of the later nineteenth century, as has happened in England, but this does go on in private works, including listed buildings, and is uncontrolled by the planning laws.

[19] Maxwell, in *Context*, no. 56, December 1997, p.25.

[20] Realistically, the high cost of articles of the correct materials and profiles compared with the cheapness of mass-produced articles bears heavily on non-grant aided work carried out in the private sector.

[21] Turner (ed.), *Windows and Environment*, 1.58. The author has inserted the words in parentheses.

[22] Piper, *Buildings and Prospects*, p.91.

[23] John Bolger, "Timber conservation – the industry view"; a talk given at a *Workshop in Building Conservation: Carpentry and Joinery*, [funded under the EU programme TREAT ADAPT] 21st November, 1997. Such a rigorous approach is expensive; however, this joinery firm has a permanent waiting list of clients.

[24] See *Appleton Charter*, Enhancement, Additions: "should echo contemporary ideas but respect and enhance the spirit of the original". The *Burra Charter* may perhaps be quoted for the question of failed design details under Adaptation, Articles 20 and 21. Where adaptation does

not substantially detract from the cultural significance of the place it is acceptable, as long as it is limited to that which is essential to a use for the place.

[25] *Burra Charter*, 1.10, *compatible use.*

[26] Maxwell, in *Context*, no. 56, December 1997, p.23.

[27] Bell, *Guide to International Conservation Charters*, p.40.

[28] Bell, *Guide to International Conservation Charters,* p.57.

[29]From Feilden, *The Conservation of Historic Buildings*, p.17.

[30] Bolger, "Timber conservation – the industry view". John Bolger's comments were made in the spirit of improving communication between professional and the trade.

[31] Several firms, both small and large, have come to the attention of the author. John Sisk and Sons, Dublin, Carbury Construction, Carlow, Cleary and Doyle, Dublin, Felix O'Hare Ltd, Newry and Francis Haughey Builder and Civil Engineering Contractor, Armagh, are five contractors experienced in conservation. Work done by the first three are related in this essay, while the latter two firms were mentioned by Richard Oram, senior architect, Environment and Heritage Service in the Department of the Environment, Belfast, as having excellent joiners. This list is given purely as a sample of the expertise available.

[32] This must be tempered with the readiness to accept that some old windows are too valuable to be subjected to use, as noted above.

[33] The *Framing Opinions* Leaflet 4, 1997, notes that a recent survey indicated that, on average, only five percent of timber in windows that were being replaced was affected by decay. Yet a Gallup Poll in 1991 revealed that forty-six percent of homeowners replaced wood windows because of "rotten timber", and only twenty percent to reduce draughts and heating bills.

[34] Ruskin wrote, "what copying can there be of surfaces that have been worn down half an inch? … There was yet in the old *some* life, some mysterious suggestion of what it had been and of what it had lost; some sweetness in the gentle lines which rain and sun had wrought." From 'The Lamp of Memory', in *Seven Lamps of Architecture*, quoted in Bell, *Guide to International Conservation Charters*, p.82.

[35] A. Linsday, in conversation with the author, July 1997.

[36] Carbery Construction, in conversation with the author, August 1997.

[37] The date should always be stamped or incised on new work which, by its similarity to the old, could be mistaken for it in a future conservation project. Sashes can be marked on that side of the stile which meets the pulley stile, as it should be left unpainted. Frames should also be marked where the date will not be erased and in a place where the mark will be found again.

[38] English Heritage's Framing Opinions campaign (started in 1991/2), led by John Fidler, Head of Architectural Conservation, English Heritage, has very successfully demonstrated the poor standard of detailing available in commercial replacement windows. The Chief Executives of the British Plastics Federation Windows Section and of the Glass and Glazing Federation admitted, after six months of the Framing Windows campaign, that they were highly unlikely to win a public battle over replacement windows in historic areas. English Heritage highlighted the variations and subtleties in the elevational disposition of fenestration; the position of frames in the depth of the wall; the different head, reveal and sill details; the number and pattern of opening lights and glass panes; the varieties of shapes of sashes and casements; the pattern and profile of glazing bars; the types and styles of ironmongery; and wide selection of special features to be found, e.g., glass, blinds, plant holders, shutters and paint colours. From John Fidler, 'Raising Window Awareness', the keynote address at Windows II: The Window Conference and Exposition for Historic Buildings, 19-21 February 1997, Washington DC.

[39] *Architect's Journal*, April 1985, windows supplement p.5. *UPVC windows in the 1990s*, pp 28, 80. The author of this publication notes on p.28 that "in 1980, a claim that a uPVC window would have a life span of twenty-five to thirty years was met with scepticism. In 1991, that same claim raises few eyebrows and less dissent."

[40] Research has been undertaken by the author on this matter, to be published in the near future. It is derived from British, German, American and other sources, and details the considerable problems which have arisen due to the continued use of organo-chemical products in old buildings and poor specification in window design. Chemically the components of uPVC windows are unstable. One measure of the growing international wariness over the use of uPVC is that Germany has classified it as a toxic material, as it contains ingredients that may cause

several types of cancer. In the production and transport of the chemicals that make up uPVC there are well-documented hazards from fire and the leaching of chemicals containing toxins. In the manufacture of the windows there is similar danger to those involved. uPVC windows may emit these toxins when burned and a small fire will melt the surface where timber would be just charred. In ironic contrast to the short life span of uPVC in its window form, the actual material is almost impossible to recycle and does not degrade. Window manufacturers are reluctant to take back old windows for reuse because of the difficulties and hazards of isolating each particular type of plastic (the uPVC window is composed of several plastics to give it sufficient body) and because none want customer doubts (and hence reduced market share) to arise from the use of recycled uPVC. Toxins from discarded windows leach into the soil below landfill dumps, contaminating the water table. Similar questions arise over the production of aluminium and its disposal. An inability to maintain either surface or hardware properly further militate against the use of this material.

[41] With regard to the ethical procurement of hardwood, logging firms and Irish timber importers have not proven satisfactorily that they cut and sell only properly managed plantation timber. The largely successful attempts in Ireland to pass off iroko or afromosia as teak due to their visual similarity has meant that the performance of the window cannot be assured. (Teak is far better able to withstand outdoor conditions, but is rarely used for windows due to its inherent oiliness (which does not take paint) and tendency to twist – the timber is still growing long after being cut.)

[42] Double-glazing in combination with the widely advertised sealing properties of replacement windows, and other internal factors, have led to unacceptably low levels of air circulation in many buildings, both new and old. This in extreme cases has been termed "Sick Building Syndrome". A quotation from the 'The Fresh Air Fiend', in *Irish Builder* March 15, 1888 (reprinted from the *Medical Press*) is appropriate. "If the temperature be anything under 60^0 F, doors and windows are closed and caulked ... It is pitiful to see the extent to which women, and men too, allow themselves to be dominated by a little wind and a little weather.... They must

seal themselves up hermetically by weather-strips, and thus exclude the little sweetness that would make its way to them."

[43] As the identification of important windows will rarely come from the owner, the progress of the National Inventory of Architecture will prove valuable in that a database will exist to identify more completely those buildings (and windows) in need of assistance.

[44] *Burra Charter*, Article 1.4 and Article 1.2.

[45] The following information is based on that available to the author and may inadvertently omit particular points from each case, or indeed mention of equally relevant conservation projects.

[46] The volume by Siuban Barry, 'Extracts of the Governors' *Minutes*,' which details all mentions of changes carried out and materials used for maintenance from 1684 to the 1920s was compiled to aid the work.

[47] See 'Repair Work at The Royal Hospital, Kilmainham, 1981-1984', in *RIAI Bulletin* April 1984, pp.11-16. The architect also kindly gave some time to this author to talk about the work.

[48] The health issues surrounding the use of heat to remove lead-based paints have not been resolved. It is also preferable to avoid heat when working near glass for safety reasons as it is difficult to prevent stresses and breakage.

[49] From an unsigned notebook, *Skiddy's Almhouse, 1719 AD, an essay in conservation, 1975* (in the IAA). The Archive also has measured drawings of the building, dated 1974. The NLI drawings collection (AD 2891, 2892) shows undated drawings and photographs of Skiddy's, possibly done around this time. The architect Peter Murphy is still in practice in Cork, but has not responded to written or telephone queries and no further documentation is forthcoming.

[50] See Redmill, in *Transactions of the Association for Studies in the Conservation of Historic Buildings*, vol. 9, pp.29-40.

[51] See Bell, in *Guide to International Conservation Charters,* p.49, 6.11a.

[52] Piper, *Buildings and Prospects*, p.91.

[53] Mr Gibney stated in conversation that the work could not be considered to be conservation, though the building did win a Europa Nostra conservation award.

[54] Although there is one remaining window in a building attributed to Thomas Burgh, the architect of the hospital (viz. the gable window at Trinity College Library), the architect did not use its dimensions. Pearce was involved in the design of the boardroom of the hospital in the early 1730s, which retains its original glazed bookcases, but the dimensions and mouldings of the bookcase doors were not used.

[55] *Venice Charter*, Article 11.

[56] Austin Dunphy, letter to the author dated 11 August 1997.

[57] Geoghegan, in *DHR* vol.vii, no.2, p.47. Piper, in *Buildings and Prospects*, p.90, quotes from the lecture by Morris 'The Beauty of Life'.

[58] See Bell, in *Guide to International Conservation Charters,* p.47, who states that extra work found indispensable in the course of restoration should be distinct from the architectural composition and bear a contemporary stamp.

[59] While most architects contacted with free with their time, and the author would like to thank them very much, a very small number were less forthcoming.

[60] This is explained in an article by Christine Casey, in *The Irish Arts Review*, 1994, pp 11-16.

[61] One school of thought regarding this window is that it was a subsequent insertion, broken out when a single-storey building was erected on the adjacent site in the nineteenth century (which was later raised and the window blocked). Another opinion is that the segmental arch was merely the relieving arch of the Venetian window, although the existence of a similar arrangement in another house by Castles (as mentioned in Chapter One) is worth noting.

[62] Georgian Society *Records*, vol. iii, pp 62-3. The sashes in this house have since been replaced with six pane ones.

[63] Clifton Taylor, *The Pattern of English Building*, p.398. McGrath and Frost comment that the reglazing with sheet of eighteenth-century houses gives them "that uninhabited look, particularly when seen side by side with 'unimproved' examples". See *Glass in Architecture*, p.150.

[64] See Fitzgerald, B. 'Russborough House', in *Country Life*, 23 and 30 January 1937, and Cornforth, J., in *Country Life*, 5 December 1963.

APPENDIX THREE

[1] Cooper, *The Crown Glass Cutter and Glaziers Manual*, preface.

[2] Richardson, *An Introduction to Georgian Architecture*, p.34.

[3] The main sources used in this essay are the *JIHC*, TCD Muniments, the RHK *Minutes*, Dublin City Franchise Rolls (in transcript), the only remaining Guild of St. Loy *Minute Book*, the *Minute* books of the Wide Street Commissioners, provincial corporation records, parish records, miscellaneous building accounts and prerogative wills in the PROI.

[4] See ffolliott and de Breffny, *Houses of Ireland*, p.90.

[5] See Eustace, *Abstracts of Wills*, vol. 1, no. 685. Orpin may have been a son of Thomas Orpin, a glazier of Carrickfergus, who had a son John and property in Dublin upon his death in 1727. See PROI prerogative wills, 1727, WB f.275b. The *Minutes of the Wide Streets Commissioners*, Volume 1, p.117 record the following; John Orpin was bequeathed 12 and 13 Crane Lane by Ruth Rothery, daughter of Peter Ward (note that a Peter Ward, carpenter, apprenticed a glazier, Samuel Bedcock; see below). Orpin married Elizabeth Rothery, who after his death married John Farrell, possibly also a glazier.

[6] NLI Ms 8037(4), Fingall Papers. Details of the rebuilding of St. Werburgh's are extant in which there are two names – both Paul and John – given to Smith, which could denote two brothers in partnership. Severens, in *IGSB* 1992-3, gives Paul Smith.

[7] James Rose's name does not appear after 1718 in the records of Barracks work in the *Commons Journals*.

[8] St Michan's Parish Register lists both William and James Rose in the 1680s and 90s. Westropp notes (NLI Ms 24936) that in 1702 William Rose was living at Essex Bridge. This was the narrow street just to the south of the bridge which became populated with glass-grinders and sellers during the eighteenth century.

[9] John Rose's will is in the National Archives, PROI 999/338/3. Rose had a son, Armsted, and leasehold of two houses in Change Lane, Dublin. No accounts are attributed to him.

[10] Delane's will is abstracted in Eustace, *Abstracts,* vol. I, no 211, in which the Rev. Delany is mentioned. TCD P.2/54/10; Delainey, 1724. P.2/54/14; Roper, 1724. The name Roper does not occur at any other time, nor was a glazier of that name enfranchised. Perhaps this person is synonymous with Stanley Rodgers, enfranchised in 1702. There is no information in the Muniments to link Roper and Delane professionally.

[11] Rowlette's work at Trinity is found in Muniments, series P.2, from 1728. The JIHC list him as a glazier at Parliament House and Tullamore Barracks in the 1750s. The Powerscourt House account book mentions a lump sum paid to him in 1740. See NLI Ms 4875.

[12] Although the forename of this Mr Wills is not cited it must have been Michael, the architect son of Isaac, the master carpenter. O'Dwyer, in *IGSB*, 1996-1997, p.8, records that Michael (*fl.* 1719-1778) was the only son of Isaac who died in 1753. Wilson's *Dublin Directory*, 1775, lists Lawson, glazier and painter, Dames Court. Watson's *Dublin Directory*, 1798 lists a William Lawson, glazier and painter, of 39 College Green, who conceivably was the same man. No one of this name was enfranchised as a glazier (nor as smith or joiner).

[13] Evans' will is listed by Vicars, *Index*, p.158. Eaton is mentioned in the *JIHC* and Col. Eyre's account book (of the 1750s), for work at the Custom House, Dublin Castle, the Four Courts and Dublin Barracks.

[14] The PROI holds records of this business; see Accession no. 1046; H. Sibthorpe and Son Ltd, 1823 - 1963. Luke Sibthorpe's work for the civic authorities is recorded in CARD. The Guild Minute Book, 1811-1835 note Sibthorpe's sons and apprentices.

[15] Thomas Jackson's will is listed in Vicars, *Prerogative Wills*, p.248.William Bibby appeared before the Wide Streets Commissioners in 1760 to state that Francis Booker would lose out by the road widening scheme, that he had twice his (Bibby's) business if not more. (*Minutes* Vol 1, p.46). The same source, on p.62, notes that James Bibby acted as exector to Thomas Jackson. Volume ii of the *Minutes* records that Thomas Meyler, glass seller, attended to the Commissioners on behalf of Elizabeth Bibby, the daughter of Thomas, guilder. Another member of the Bibby family was Joseph, mentioned in the 1775 *Dublin Directory* as a glass seller.

[16] Vicars' *Prerogative Wills*, p.475, notes that Walsh's will was proved in 1798. The *Commons Journals*, 1785, confirm that he glazed the new gaol. He worked at The Royal Hospital from 1778, three years after his enfranchisement, to 1797, at various annual rates. See RHK 1/1/6, 1775. See TCD P.2/152 for Walsh. Sarah Walsh is the glazier in accounts from 1801, and from 1804 Josiah Jackson and Walsh glazed together on contract.

[17] William Warren's will was proved in 1797; (Vicars, *Prerogative Wills*, p.479). Nathaniel Warren glazed at the stamp office in the 1780s (*Commons Journal*, 1787). A Nathaniel Warren is mentioned in the Guild Minutes of 1822, living at Strand Street. St. Leger Papers, NLI, given in the *DHR*, vol. xviii- 4, p.127.

[18] Callaghan's address is given as Mary Street in Vicars' *Prerogative Wills*. In the 1775 *Dublin Directory* Callaghan's address was 157 Britain Street. For his work at Kilkenny College see the *Commons Journal*, 1785 and 1786. See also *CARD* vol. 14, p.46, tradesmens' bills (in Dublin).

[19] Mentioned as admittances to the guild, in the *Minute Book* 1811 - 1835. Both Josias and Francis Phillips (1830) were recorded in the franchise roll as smiths. *CARD* vol. 16, 1811.

[20] Possibly both were sons of Richard Raper whose will was proved in 1786, who lived at Lower Exchange Street. In his will John Raper made bequests to Robert and Richard Raper. He had property on many Dublin streets, and concerns in Lower Exchange Street.

[21] Dublin Franchise Rolls. It is not known if this Dominic Brocas was a member of the well-known artistic family of the early nineteenth century.

[22] Petty is quoted in a contemporary manuscript book by an anonymous author. See NLI Ms 7795, f.51.

[23] Macartney Letterbook 1679-81. Palland, the Dublin supplier of the glass, appears to have requested it back again. See letter of December 9 1679. In a letter of November 9, Macartney stated that glaziers would not buy two cases he had had previously for more than 20 shillings, "which is too cheap".

[24] See Swift, *Maxims Controlled in Ireland*, in Bowes Daly (Ed.), *Ireland in the Days of Swift*, p.158-9.

[25] See the *Dublin Intelligence*, June 26 1711.

[26] Emerson's emigration was noted in the *Dublin Intelligence*, March 30 1731. He "broke up Shopkeeping" in order to settle in Pennsylvania. This account does not mention his Christian name, but it may be assumed that it was the same Caleb Emerson who let a brick house valued at £18 in St. Michan's Parish in 1718. See B. Boydell, 'Some Archival Notes on the Round Glasshouse in Mary's Lane, Dublin', in Glass Society of Ireland *Newsletter*, Jan 1994, source RCB Ms P276/12/1, 45, 47.

[27] Wilson is recorded in accounts in the *Commons Journals* and *CARD*. The £3 quarterly retainer was noted in 1661, which contract not specified; see *Ormond*, (HMC) n.s., vol. 3, 1904. A large debt of £97.15.0 was due to him in 1663. See the *8th Report* (HMC), Appendix One, p.526. This sum quoted arose before his enfranchisement, but as he was admitted by special grace, the likelihood is that he had completed an apprenticeship elsewhere; he may have been English.

[28] Rock is mentioned in the Accounts of the Blue Coat School 1669-73, NLI Ms 13659 (4). See RHK 1/1/1, 17 November 1692. With an increase in the price of glass his contract sum was raised to £32 per annum from 1702.

[29] See TCD P.2/47/14-16 and sundry other bills until P.2/56/7-10, in 1726, the last mention of Joan Delane's work in Trinity is in 1726. George Delane's property in Cos. Galway, Roscommon and elsewhere is listed in *Abstracts of Wills*, vol. 1, no. 211.

[30] PROI, reference T1977.

[31] See PROI, T 17573. Leland's propery included leaseholds on Capel Street, Great Britain Street, Church Street, Nicholas Street, and in Cos. Roscommon and Down. Freehold houses and premises were at Merchants Quay, Chambers Street, Great Britain Street, Loftus Lane, Abbey Street, Cork Hill, Aston Quay and ground rents in Kings Inns.

[32] See Eustace and Goodbody, *Quaker Records, Dublin, Abstracts of Wills,* vol. 2 p.73.

[33] See RHK 1/1/2, f. 179.

[34] See TCD P.2/136.

[35] See *JIHC* vol. xii., quarterly bills. The *Minute Books* of the Wide Streets Commissioners, volume 2 (1765-79) contains information on Moore's two holdings in Castlemarket, for which he was awarded £99 by the Commissioners as compensation on their removal (p.153). With his

wife Mary Dunn he owned or leased nos. 24 and 25 Dame Street and 90 George's Lane, which apparently backed on to each other (p.192).

[36] See RHK 1/1/6, July 1778, when Walsh submitted a contract proposal. Walsh is last noted at the hospital in 1796 (RHK 1/1/7), f.154. *JIHC* 1785 (vol. 22 of a series, printed 1786) notes on p.764 the expenses of the New Gaol, including Walsh as glazier. See also TCD Series P.2. Walsh's will was proved in 1798 (Vicars, *Prerogative Wills*, p.475).

[37] See *JIHC* vol. xii, 1786. £150 was registered on account for Barrack bills. See *JIHC* 1784, (1785 edition), p.833, noting that £57.8.2 was paid in full of bills for the College of Kilkenny in 1784. *CARD* vol. xiv, Jan 1788 notes payment of £25.12.9 for glazing from Feb 1786 to Oct 1787. His will is listed in Vicars, *Prerogative Wills*, p.73, but does not survive.

[38] He had property on many Dublin streets, and concerns in Lower Exchange Street. He was most likely connected with the Ringsend Glass house, as he advertised in the *Dublin Evening Post* of March 1 and September 22 1798 that the produce of the Ringsend Crown Glass Manufactory was sold at John Raper's Window Glass Warehouse, no. 21 (or 23) Lower Exchange Street. See NLI Ms 24936 for evidence that Westropp found this mentioned in 1789

[39] Francis Booker, who is not listed in the franchise rolls, became Lord Mayor of Dublin in 1772. For information on the Booker family business and contacts, see the Knight of Glin, in *Country Life*, 28 Jan 1971. In 1767 John Booker of Essex Bridge (who apparently was not admitted to the franchise) as a rode the annual procession as a warden of the Merchants' Guild. See Webb, *The Guilds of Dublin*, p.252.

[40] See Lord Cloncurry, *Personal Recollections* (Dublin, 1849), p.10. Cloncurry was trying to illustrate the mixing of the classes that characterised college life. It is quite likely that this Edward Lawson was a son of William Lawson, noted above, who tried to persuade Trinity College to give him their glazing contract after the death of John Rowlette.

[41] The 1698 Act ordered a general prohibition on exports of all products in which Ireland was likely or potentially able to undercut England - including the nascent glass industry. In 1746 a duty of nine shillings and four pence was placed on every hundredweight of glass made in Great Britain. Only British glass could be imported into Ireland and no Irish glass was to be exported

under a penalty of ten shillings for every pound exported. The export restrictions were removed at the end of 1779. See Westropp, *Irish Glass*, p.137.

[42] *Faulkner's Dublin Journal*, 22-5 March 1745/6.

[43] *Faulkner's Dublin Journal*, 23April 1788.

[44] See *JIHC* vol. xii, 1787, March 9, where it is stated that "for and upon every 100*l* value of Plate glass or of glassware, being the manufacture of the European Dominions of the French King, which shall be directly imported ....there shall be paid at duty of 12*l* and so in proportions for any greater or lesser values." *JIHC* vol. x, 1792-4, appendix clxxvii, Schedule E of duties payable: "all foreign glass, except the Manufacture of France...imported as specified...for every £100 value by Declaration…from Great Britain, £60. Glassmaking tax in England was 9s 4d per hundredweight of materials used. See Weeden, in *Glass Technology*, Oct 1983, pp.240 - 258.

[45] See *CARD* vol. xv, p.382, Jan 20 1803.

[46] See the Guild *Minutes*, ff. 46-7. The Cork Trades Association petitioned under its chairman F. Beamish in April 1835. See Westropp, Irish Glass, p.212.

[47] See *JIHC*, vol. viii, p.102. Meares made his plea from the Four Courts Marshalsea. Perhaps his life improved, if this is the same George Meares, glazier, whose will is listed in Vicars, *Prerogative Wills*. Kane' petition is listed in *JIHC* vol viii, p.495.

[48] Dunbar was one of the partners in a (crystal) glass-house in Bow Street, Dublin (with warehouse in Fishamble Street), which was set up in the 1760s and apparently taken over by him in 1771. See Westropp, *Irish Glass*, p.208, notice in *The General Newsletter*, 1771. NLI Ms 24936, Westropp papers, includes a transcript of the relevant information of his bankruptcy in the *London Gazette*, 3-6 October 1772.

[49] The numbers of foreign names indicates the popularity of the various late seventeenth-century schemes and Acts of Parliament for settling Protestant strangers. A George Colvert, native of Preston (glazier, 1664 [who does not appear in the franchise roll]), Daniel Halgan, (glazier, 1671, interestingly described as native of Dublin) and John Beard (1671, native of Chester). See Loeber, in *IGSB*, 1973, note 265 who lists a number of names given in W. A. Shaw (Ed.), *Letters of Denization and Acts of Naturalization for Aliens in England and Ireland, 1603-1700*

(Lemington, 1911). Saquinus Merceir, (enfranchised 1682), Guillame Tonge (1678) and Thomas Say, (looking glass maker, 1695); are given in the Franchise Rolls as AP (Act of Parliament). Mercier and Tonge were admitted to the Dublin franchise by special grace, indicating that not all strangers were specifically noted as Hugenot refugees in the Rolls.

[50] Joan Delane, Sarah Walsh and Mary Moore are three names documented through building and maintenance accounts. Females of other trades are not uncommon, with women receiving payment for plumbing, paving and slating among other skills. An eighteenth-century visitor to Ireland noticed the numbers of women working in the family business; Mark Elstob wrote in the 1770s that "the Irish seem to be very attentive of the education of their females. In the mercantile class, we frequently find the women keeping the books while the men are employed in the other ordinary business of the shop." See *A Trip to Kilkenny from Durham*, p.95-6.

[51] Guild of St. Loy, *Minutes*, f. 317, 318 (1830).

[52] Well known glass-grinders not enfranchised include the Lelands, the elder John Booker, Francis Booker and the first Jackson, Thomas; known glaziers garnered from building and repair accounts include Edward Burnett, Stanley Roper, Charles Farran, Miles Fells, Francis Godfrey, Thomas Holmes, James Hull, and William Lawson. Some families with many relatives involved in the business seem to have had only some members enfranchised, including the Jacksons, Bookers, Bibbys, Godfreys, Roses, Lowcays, Rapers and Sibthorpes. It may be that in some but not all cases these men were Roman Catholic.

[53] There is more than one mention of friction between native glasshouse workers and the foreigners brought over to blow the glass. For example in 1768 Henry Lunn and Company, glass manufactureres, petitioned Parliament for aid as foreign artists they had employed refused to work with their Irish hands and destroyed the pots and metal. NLI Ms 24936, Westropp.

[54] See Guild *Minutes*, f.105 (1821). A reference in the PRO (Chancery) relates to Barry, glass manufacturer, 15 Lower Ormond Quay, Dublin, being a member of the Guild of St. Loy in 1797. From the papers of Mary Boydell.

[55] The make-up of the membership of the guilds is largely a matter of conjecture. The Guild of St. Loy *Minutes* are not always specific, in that monthly note was taken of new members but

many lists do not give the relevant trades. Webb, in *The Guilds of Dublin*, p.214, notes that guilds which represented a number of crafts required each brother upon admission to enter into a bond under which he undertook to practice his own craft alone.

[56] The later entries in the Franchise rolls 1774 - 1820 and 1820 – 1841 are useful for this exercise; some of the glaziers accepted by the guild do not appear in the rolls, and when they do the great majority are given as smith, including the Sibthorpes.

[57] From a billhead of Jackson's shop, the purchase dated 1747, collection of the Knight of Glin, photographed by the IAA.

[58] *Dublin Directory*, 1775. James Robinson lived at 27 Capel Street, while John Robinson lived at 9 Dame Street, and is met with in the *Minutes* of the Wide Streets Commissioners, as his property was part of the projected widened street (see volume 2, p.132 and p.154). These two men may have been unrelated.

[59] *Esdall's Newsletter*, 13-16 December 1751, contains the following; "Thomas Silcock, Glazier and Printseller opposite the Tholsel in Nicholas Street - selling complete sashes, of red deal, glazed with Bristol Crown glass. 12d a foot." Silcock's will is listed in Vicars, *Prerogative Wills*. See the franchise rolls for the entries relating to him and his father.

[60] This Cornelius Callaghan is mentioned as being resident in Mary Street at the time of his death, in the Guild *Minutes* for 1814.

[61] See *JIHC*, vol. viii, p.102.

[62] Humphreys is mentioned by Bryan Bolger, measurer; see Kelly, in *DHR,* vol. iii - 1. It may be premature to link this man with Thomas Humphries, author of *The Irish Builders' Guide*, 1813.

[63] See Caulfield (Ed.), *The Corporation Books of Youghal*, p.64, for Durant.For Duckett, see McLysaght (Ed.), *Calendar of Kenmare Papers,* p.283-4. Richardson, in *An Introduction to Georgian Architecture,* p.38, noted that not uncommonly the business of plumber included painting and glazing. The Englishman who patented the metal fanlight in 1774, Francis Underwood, was a plumber-glazier. See Sambrook, *Fanlights*, p.17.

[64] The Guild records give the names of some composite painter-glaziers, and one smith apprenticed to a painter-glazier. The Dublin directories offer other combinations, the most

unusual being that of Thomas and Richard Raper, who were listed as glaziers and grocers in 1775.

[65] This name – semoned – for a window glass has not been encountered elsewhere and could be a transcription error. See Dublin Franchise Roll, 1574 - 1774, where the stipulation is recorded.

[66] Caulfield, *Corporation Books of Youghal*, p.64. Durant was only excused paying for the reglazing if the windows were broken by travelling players or their audiences.

[67] TCD Ms 2063, *Extracts of Parish Records*, by Mason, f.25, 26.

[68] The Articles for Burton are in BM Add 46947B. The contract details are reprinted by de Breffny, in *The Irish Arts Review*, 1988, pp.73-77.

[69] NLI Ms 11455 (1), Castle Durrow papers. There were many different glaziers associated with the work at Castle Durrow over the years of its construction and early history.

[70] *Articles of Agreement,* 1749 by George Semple (St. Patrick's Hospital records). Gilson School, *Articles of Agreement*, 1824, IAA.

[71] In 1839 the overseer of works wrote a letter to the Governors stating that the glazier George Morris was incompetent to fulfil the contract. George Lewis, the previous contractor was re-engaged. See RHK 1/1/15, f. 341.

[72] See RHK 1/1/6, May 1778, giving notice to publish an Advertisement for the contract. In 1824 the Governors ordered that "public Advertisement be made…for glazing and cleaning…the glass to be proposed by the foot". RHK 1/1/13, f. 104.

[73] NLI P 7075, P 7076, Orrery Papers. At Castletown Dennis Tilburry was retained on a glazing contract, and latterly his son Thomas. See the uncatalogued Castletown Papers, IAA.

[74] NLI Ms 8036, Fingall Papers. See McLysaght, *Kenmare Papers*. Duckett's name occurs from 1762 –89; his plumbing was done by contract.

[75] Bean's advertisement was printed in the *Dublin Weekly Journal*, June 4 1737.

[76] Jonathan Swift went into print more than once to castigate these alliances. In *Maxims Controlled in Ireland* he wrote "the mason ...and the glazier take a lot of ground, club to build one or more houses, unite their credit ... sell to the best advantage they can." In *A Short View* he wrote "hence our increase of buildings in this City, because workmen have to do but employ

one another, and half of them are infallibly undone." See Bowes Daly, *Ireland in the Days of Swift,* in which both essays are reproduced.

[77] The writer also took exception to artisans being involved without proper building skills. See the *Freeman's Journal* 27Dec 1768, p.137. The article has been attributed to Andrew Caldwell

[78] *JIHC* vol. v, appendix xlvi . A committee was set up to examine repairs to Parliament House. Rowlette estimated a cost of £19.2.0. "...and the workmen declared they had a reasonable profit, and such as they could live well by, except John Rowlett the glazier, who demanded 11*l* 15*s* over and above the sums hereafter mentioned, at the rate of 9d per foot for Bristol Crown-glass, when it appeared that 7d per foot was the usual price, and had been allowed him."

[79]RHK *Minutes* 1/1/5, p.30. Farran was to contract for the glazing for a term of 21 years at £16 per annum, whereas the previous glazier, Hull, had got £36. As Farran is not recorded elsewhere, one cannot guess if this sum was his lot. It improved to £20 annually in 1746 due to glass price rises. Possibly James Hull had received a larger sum in compensation for lack of tenure, though this cannot be proven.

[80] See RHK *Minutes* 1/1/6, p.133; "the Governors are pleased to approve the proposals of William Walsh provided the said Walsh undertakes for the sum mentioned in his proposals to keep not only the Hospital but all the Buildings Houses and Offices which belong to it in the Repair mentioned in the said proposal. As of 1796 (RHK 1/1/7), f.154, Walsh was still the glazier.

[81] RHK 1/1/13, f. 361, 25 April 1827. Dissatisfaction was expressed by the board over the excessive charges for the previous quarter. The glazier was to get orders in writing from the Overseer and the subsequent orders were to be used as vouchers for his quarterly bills.

[82] A Plan for Reducing Expenses was formulated by the board. The system of window cleaning was to be given up altogether and the work to be performed when absolutely necessary by the house carpenters on the outside, and by the servants or nurses on the inside. RHK 1/1/15, f. 237. It was hoped to save £5 annually.

[83] See Neve, *City and Country Purchaser*, p.153.

[84] See TCD P.2/50/5. Joan Delane bought eleven cribbs from one supplier in 1723 and five cases from another. RHK 1/1/13, April 1824. The proposals were to include the quality of the glass.

[85] See *Esdall's Newsletter*, no 136, 1751, advertisement by Silcock. Many eighteenth- and nineteenth-century builders' guides list the complete prices per foot of sash, with timber type and dimensions and glass type specified.

[86] This account is taken primarily from British sources; Neve's *City and Country Purchaser,* Nicholson's *New Practical Builder* and Cooper's *Crown Glass Cutter and Glazier's Manual.*

[87] See *JIHC* vol. vi, 1760, appendix cccxxii., Nicholson, *New Practical Builder*, p.422.

[88] Articles of Agreement, 1824. T. H. Bishop in Middleton, in *Modern Buildings*, vol. 2, p.181, states that the waste putty squeezed out by the glass should not be cut off for at least a week after the glass has been stopped in.

APPENDIX FOUR

[1] See Louw, Origin of the Sash-window, p.75, 83-4. As carpentry was in decline in the early seventeenth century carpenters resented the loss to the joiner of the increasingly fine work that was demanded of them, especially as there was an influx of skilled European joiners at this time who could surpass them in competence.

[2] See Berry, in *JRSAI*, vol.35, 1905, pp.328.

[3] Dublin Corporation archives, Franchise Rolls. For Tailors' Hall see Berry, in *JRSAI* vol.48, 1918, p.40. Gibney has suggested (in conversation, from his research) that a substantial number of English joiners (and other tradesmen) had themselves enfranchised in Dublin before arriving in Ireland, or even in anticipation of working there in the future.

[4] See Louw, Origin of the Sash-window, p.103.

[5] Burton Manuscripts, BM Add Ms 46958B, f.235-6. BM Add Ms 46964A f.34.

[6] Burton Manuscripts, BM Add Ms 46964B ff.71-2, and ff.107-8.

[7] NLI P.3753, Lord Ferrard, letter of 22 July 1722.

[8] See Clarke and Refausse, *Historic Dublin Guilds*, p.22 for information on the joiners, and p.18 for the guild of carpenters. Webb states, from information from the Barber-Surgeons' Guild,

that in guilds in which several trades were represented, the petitioner on gaining admission, had to undertake to practice only his own trade. See *The Guilds of Dublin*, p.214.

[9] Louw, Origin of the Sash-window, p.75. See also Beard, *Craftsmen and Interior Decoration*, p.54.

[10] From research by Arthur Gibney related in conversation to the author.

[11] See RHK 1/1/1, p.105, 4/6/1698. RHK 1/1/5, p.156, 9/4/1763. For Price and Sisson, see TCD P.2/14/15. TCD P.2/17/27.

[12] NLI Ms 11455 (1), Flower Papers. NLI Ms 11469 (2) Flower Papers.

[13] NLI Ms 8037 (2) Fingall Household Papers.

[14] Aheron, *Treatise*, pp 65 and 94.

[15] See TCD P.2/65/1 and P.2/65/8.

[16] *JIHC*, vol.xvi, 1795-6, appendix cccxx-cccxxi.

[17] See Mitchell, in *IGSB*, 1987, p.36. Humphries' *Irish Builders Guide*, p 126. Humphries includes an interesting note with regard to prices. "Sashes, there is no part of carpenters work, the public are so much deceived in as sashes; 20 years ago sashes were one-third greater value than at present, notwithstanding the great increase of timber and materials" (owing to the Napoleonic Wars). On p.129, the author concedes that "as I apprehend some carpenters will object to all these prices, I must inform the public, that the material of any sash ... does not amount to more than four pence, while he is allowed 6d per foot for his material and profit."

[18] RHK *Minutes*, 1/1/10 f.308.

[19] See Moxon, *Mechanic Exercises*, pp.71-3. Neve's *City and Country Purchaser*, published around the same time as the second edition of Moxon, is silent on joinery for windows.

[20] Louw, Origin of the Sash-window, pp.139, 140-142. At Kilmacurragh it may be argued that those single-pieces sashes which survive in the main house were constructed at a later date, as when the wings were built in the 1840s, but there are subtle differences between these latter and those of the main house.

[21] Louw has noted that the growing control of architects over the details of windows and other elements in the later eighteenth century was linked to the perseverance of poor detailing when

refinements were left to the empirical experience of the craftsmen. See Louw, Origin of the Sash-window, p.257-8.

[22] The drawings of the Lismore Collection (IAA) illustrate this practice clearly. Ashpitel, in *Treatise on Architecture*, p.260, notes in this vein "the sooner a workman begins to think for himself the better, he ought always to endeavour to improve on the processes of others, either so as to produce the same effect with less labour or to produce better work." This author was of the opinion that only in sashes could an improvement in nineteenth-century joinery practice be seen.

[23] Burton Hall correspondence, BM Add Ms 46964A, f. 35-6.

[24] The *Commons Journals* show detailed artisans bills for contracts such as the building of the new Parliament House and some of the Barracks, in which corrections were made afterwards to the tender estimates.

[25] In the mid-eighteenth century several scandals arose, one of which involved the measuring of Col. Eyre, who was in charge of work in the Dublin Barracks, and who as a result was driven to publish his defence to regain his good name. A profession of measurer grew out of such manoeuvrings. See Casey, *Books and Builders,* vol 1, p.179 and p.186.

[26] See *JIHC* vol. v, 1749-56, appendix xciii. Shutters per piece amounted to six shillings on contract, whereas by bill they cost eight shillings, and window boards were one shilling and four pence on contract and one shilling and six pence per bill.

[27] Salmon, *Palladio Londonensis*, p.8 and p.12.

[28] As noted by Sir Balthazar Gerbier, in *A Brief Discourse Concerning the Three Chief Principles of Magnificent Building* (London, 1662, reprinted, Gregg, 1969), pp.17-9, quoted in Louw, Origin of the Sash-window, pp.70-1.

[29] BM Add Ms 46964A, f. 35-6.

[30] Moxon, *Mechanic Exercises*, pp.142-3.

[31] See Louw, Origin of the Sash-window, pp.194-8.

[32] Louw, in The Origin of the Sash-window, p.264, quotes Thomas Skaife, *A Key to Civil Architecture, or, the Universal British Builder* (London, 1774), pp.154-5. Skaife may have been

supporting guilded joiners against the makers of off-the-shelf sashes, if these were introducing competition into the joinery trade. Ashpitel, in *Treatise on Architecture*, p.260, states that "the practice of good joinery is best learned by observing the methods of good workmen, and endeavouring to imitate them."

[33] TCD P.2/19/27, July 1710. TCD P.2/44/25, Sisson, in charge of getting, freighting and paying customs on timber from Wicklow port.

[34] While the Trinity joiners usually billed for the ancillary items (and these are listed under joiners work in the Gilson School contract) some bills noted in the *Commons Journals* allocate sash cord, sash screws and casement turns to the ironmonger. See for example *JIHC* vol. v, 1751, appendix liii.

[35] NLI Ms 11455 (1), 10 November 1716.

[36] See Berry, in *JRSAI*, 1905, p.328.

[37] TCD P.2/126, work on east side of east building, Library Square, 1759. The old seats, backs and elbows were repaired. "To 317 days of sundry carpenters repairing d° windows exclusive of making and putting in the new sashes and frames and hanging d°." Much earlier (in 1721) John Sisson charged two shillings per day for mending sashes and shutters. See TCD P.2/47/31.

[38] RHK 1/1/13, f.29-30, 1823.

[39] RHK 1/1/13, f.325, 1826.

[40] A Mr Massey, joiner, worked under Wren in 1677 and 1678, making a screen and tendering for pew-making in the great wave of church rebuilding then ongoing. No christian name is given. See *Wren Society* vol. xix, pp.10, 26-7. The *Index to Wills*, vol. 1, p.586, mentions that a Robert Massy left a will dated 1712. It also names this, or another Robert Massy who married Elizabeth Dike in 1673 (also p.586).

[41] This Brock may have been a relative of Edward Brock, carpenter of Dublin, who left a will dated 1698. See Vicars' *Wills*, p.54.

[42] See Dublin Franchise Rolls and TCD P.2/17/25 and P.2/17/27. (A copy of a deed of marriage between a Robert Sisson, gentleman and Agrilla Flawn, widow, 1749, survives in the PROI, Perog. Grant Book, Fol. 86B.)

[43] The last reference to Sisson is found in P.2/62/14. Carpenters contracted during Sisson's tenure included Gabriel Price, Isaac Wills, C. Brooking and William Maple.

[44] See NLI Ms11455 (1), Memorandum of Agreement between John Rudd and Wiilliam Flower, 10 November 1716. The Georgian Society *Records* suggest that Benjamin Rudd was from Cumberland. See vol. 2, p.65. The will of Benjamin Rudd, carpenter (1758), does not survive.

[45] Aheron, *Treatise*, list of subscribers. Dublin Franchise Rolls. The other subscribing carpenters were Pierce Archbold, John Chambers, John Gerrard, William Goodwin, Hugh Hanna, Patrick Lyons, Henry Pentland, John Slator, Edward Sammers, Michael Sword and John Tracy.

[46] Stewart has already been mentioned as the carpenter who installed the new sash-windows at the Royal Hospital. The *Commons Journals* mention Stewart in connection with repair works to windows in the House of Commons among other rooms in 1751. *JIHC* vol.v, 1749-56, appendix lx. See TCD P.2/101 and 126 for his work at Trinity College (Front Square and Rubrics).

[47] See TCD P.2/144/2, TCD P.2/163/1-4 (billing for large amounts of work, two bills amount to over £100) and TCD P.2/169/1. PROI, Bolger Papers, April 17, 1793. TCD P.2171/1-6 consists of papers concerning Mary Childs, including a memo on the late Mr Childs' bill for timber; a request by "the carpenters that worked in the college for Mr Childs" to Dr Barrett, asking him to detain their wages (5 signatures); and two memorials of Mrs Childs, protesting at deductions made from her account, and asking for assistance; she explained that her husband had been the principal carpenter to the college for over 30 years, but she had lost the work in the college because her two sons disobliged the Board and one of them was in prison for debt.

APPENDIX FIVE

[1] *Concise Oxford Dictionary*, p.77. See also Bell, *The Historic Scotland Guide to International Conservation Charters*, p.23.

[2] Burra Charter, article 1.4. one or all of these processes may be necessary in looking after a place so as to retain its *cultural significance.*

[3] *Deschambault Declaration*, repeated in Bell, *Historic Scotland Guide to International Conservation Charters*, p.24.

[4] *Concise Oxford Dictionary*, p.620. See also Bell, *Guide to International Conservation Charters*, p.30.

[5] See *Venice Charter*, Article 12. (The word legible is not actually used in this article.)

[6] The Burra Article 1.5 terms maintenance protective care. The Venice Charter (Article 4) stresses that permanent maintenance is essential.

[7] "Conservation is based on a respect for the existing fabric and should involve the least possible physical intervention; *Burra Charter*, Article 3.

[8] *Burra Charter* Definition 1.6: Preservation is maintaining the fabric of a place in its existing state and retarding deterioration.

[9] The Burra Charter, article 1.8, defines it as "returning a (place) as nearly as posible to a known earlier state ... is distinguished by the introduction of materials (new or old) into the fabric."

[10] See Bell, *Guide to International Conservation Charters*, p.25, who elaborates on the intrinsically deceptive nature of replication as opposed to reconstruction. "This is similar to the ethical and legal distinction made between a forgery and a marked copy of an artwork."

[11] *Concise Oxford Dictionary*, p.1041.

[12] See *Appleton Charter*, section D (Practice). "The use of reversible processes is always to be preferred to allow the widest options for future development or the correction of unforeseen problems, or where the integrity of the resource could be affected.

[13] The Burra Charter does not allow for the introduction of new material; Article 1.7. Venice allows the replacement of missing parts, harmoniously integrated; Article 12. Venice, Article 11, requires justification for removal of accretions.

[14] See Bell, *Guide to International Charters*, p.33, who quotes the 1995 Council of Europe Segesta Colloquy [p.3], "to make sure that current use of the heritage, which is desirable, does not destroy the chances of handing it down to future generations."

[15] *Concise Oxford Dictionary* does not list refurbish - the word is equated with refurnish; the dictionary states that the prefix 're-' is often used "with implications that previous doing, etc. was deficient or erroneous or now requires alteration or improvement or renewal". Refurbish is not a definition in the Charters.

[16] *Concise Oxford Dictionary*, 1958 edition, p.1033. The legimate use of this term depends on a clear knowledge of the component words of its definition. It is not defined in any charter.

[17] *Concise Oxford Dictionary*, 1958 edition, p.1033. "Restore [a building] to good condition, renovate, mend, by replacing or refixing parts or compensating loss or exhaustion". Repair is a neutral word, without aesthetic or historical connotations. The Burra Charter notes that it involves restoration or reconstruction; Article 1. 5.

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